Increased Demand and Increased Prices in Paper Business a Certainty

THE past thirty days has witnessed not only an upward turn in the general lines of commodities, but also a marked improvement in the demand for paper.

This has been predicted and was to be expected. The volume of business in all lines of commodities has swung to too low a figure, and when last June all producers of commodities with one accord adjusted their production to the low level of demand, it then became evident that all we needed was thirty to sixty days before consumption would overtake the demand and force an upward turn, both in the volume and the price of commodities needed.

In June the shoe business was at low ebb. In August a general resumption of manufacturing in the shoe factories became a fact.

The textile business, which was slowed down to the lowest production in years, has also generously increased its operations, due to the increased demand for textile production.

The woolen business has been stabilized with the price of raw wool firm and at a high level, for the producers of wool and factories are generally increasing operation.

The steel business, which declined to 30 per cent operation level in June, is now at an operation level of 55 per cent to 60 per cent. Last week witnessed the placing of orders by railroads for some 13,000 steel cars, which, with the order from the Pennsylvania Railroad for 10,000 steel cars, was the largest of the year. Steel rails are in demand and general purchasing of steel by all railroads for winter and spring delivery is now in order.

The placing of orders by merchants with wholesalers, converters and manufacturers has gained each week during August. Marshall Field & Co., in their review last week, stated that the heaviest buying of the year was received, and the purchasing during that week was 'way ahead of the purchases for the corresponding week in 1923.

In the paper business the upturn has been noteworthy. In the first place, ground wood (which was selling some sixty days ago on the basis of $25.00 to $28.00 per ton) has gone up week by week until it is now quoted between $33.00 and $35.00 per ton. Waste papers, which sixty days ago were selling from $13.00 to $14.00 per ton, have now reached $25.00 per ton in Chicago. Foreign kraft pulp, which was priced between $50.00 and $52.50 per ton sixty days ago, has now reached the level of $58.00 and $59.00 per ton, and the last reports from New York state that foreign kraft pulp will be sold at not less than $60.00 per ton ex dock, New York, by Monday, Sept. 8th.

The one thing that has brought these market rises in basic raw materials in the paper industry to pass is an increased demand for paper products, due to the increased volume of business which the country is enjoying.

Stocks of foreign pulp at seaboard are smaller than they have been in some years. The only pulp that is coming in (that is reported available for manufacture in the United States) is pulp that was bought months ago for delivery during the summer and fall. Kraft pulp stocks abroad are negligible, and Sweden, Norway and Finland are reported to have little for sale for the balance of the year, due to the fact that they sold considerable quantities to the United States, and since making those sales the improved conditions in Europe, Africa, Argentine and other countries have enabled them to sell off all the pulp they can produce for the balance of the year.

Unbleached sulphite pulp of good quality has reached the price of $57.00 per ton, which is high for this year so far, and the predictions are that that grade of raw material will also appreciate materially for the balance of the year.

The production of pulp in the United States is at the lowest mark for years past, due to the fact that the Scandinavian and Finnish mills were able this spring and last fall to put quantities of pulp into those markets at a price lower than the American producers could meet, because the American laborer commands materially higher wages than the foreign laborer. The result was that the American pulp mills closed down and the American paper mills bought abroad. Now with the expansion of business which we are now witnessing in the United States, and the enlarged demand for paper, and consequent increased demand for raw materials such as pulp, paper stock and rags, and with the foreign source of supply curtailed, a rise in paper prices is inevitable, and the predicted rise is now here. It is true that the rank and file of paper purchasers have not yet seen the effect of the rising markets because the mills have had stock on hand which they were willing to sell at going prices, but the stock which the mills have on hand rightfully belongs to the wholesalers and retailers.

In other words, if the wholesalers and retailers had anything like a normal stock of paper, there would be no stock whatever in the hands of the mills. We have no hesitancy in predicting that the grades of paper which the retail and consuming public favor, now in the hands of the mills, will rapidly be absorbed, and that the immediate upturn in prices on all grades of paper into which ground wood, kraft pulp and those grades of sulphite enter, will continue.

Few of the trade realize that the consumption of paper in the United States is increasing yearly, and that the production of chemical pulps is decreasing, due to a decrease in wood supplies and adverse market conditions. Today the United States is dependent in general on the foreign mills in the kraft pulp line for about 150 per cent more pulp than is produced in the United States, and on the average dependent for over 40 per cent of its raw material supplies on foreign sources.

Any curtailment, therefore, of foreign supply of raw materials, in view of the expanding business in the United States and the world at large, means increased prices.

COAL or WOOD

Burns Wood Refuse as readily as Coal

Burns STRAIGHT COAL 83% efficiency at 205% rating

ALSO Burns Straight Wood Refuse having 60% moisture operating at DOUBLE RATING

Change of fuel at moments notice

DETROIT

EDITORIALS

Great Progress in Standardization

STANDARDIZATION is becoming one of the most important and appreciated activities of both trade and technical associations, according to the new Year Book of the American Engineering Standards Committee. Over 140 of the 235 national organizations which are officially participating in the standardization projects of the A. E. S. C. are trade associations. One hundred and fifty-two projects have been completed, or are under way. The number of the individuals serving under various sectional committees of the different projects is nearly 1100.

The paper and pulp industry is listed among those projects which have reached an official status.

Co-operation in joint activities between Mr. Hoover's Division of Simplified Practice and the A. E. S. C. has steadily increased. In general the work of the Committee is concentrated upon standardization projects which involve technical considerations, while the Division of Simplified Practice concentrates upon such eliminations as it is possible to carry out from a consideration of statistical data alone, or as stated in the book on trade association activities issued by the Department of Commerce, "the layman can proceed successfully with a simplification program, while it would be impossible for him to consider seriously standardization problems by himself."

In order to meet the demands made upon it by industry and to supply the needs of the various working technical standardization committees, the American Engineering Standards Committee has greatly broadened its information services, and has added an engineer translator to its staff for this purpose. In this way, complete information is made available to sustaining members, trade and technical associations and other inquirers on standardization activities in foreign countries, as well as in the United States.

The Year Book may be secured by addressing the American Engineering Standards Committee, 29 West 39th Street, New York City.

Correcting a False Rumor

THE DESIRE to correct an erroneous rumor that may be so harmful as to affect the growth and prosperity of a part of our American commonwealth leads us to assist the Los Angeles Chamber of Commerce in their endeavor to set at naught the impression that Southern California, and Los Angeles particularly, has suffered a collapse. Many of these rumors started shortly after the Hoof and Mouth epidemic had been carried to Southern California from the northern part of the state, and opportunity has been seized to tie onto this epidemic all sorts of erroneous rumors.

In a recent issue of a widely read financial publication, the belief was expressed that the city of Los Angeles has suffered a collapse. The writer in his disputed criticism stated that late developments have tended to show such a state; that "a visit to any railroad station in Los Angeles will show great numbers leaving the city. Visits to employment agencies give an indication of the vast amount of unemployment."

Mr. Chapin Hall, financial editor of the Los Angeles Times, has made a refutation of the statements in comment. He states, "As a matter of fact, the Los Angeles boom has not collapsed, because there was no boom, within the accepted meaning of the word, to collapse. Webster says that a boom is the rapid settlement and development of a town or district, and within this definition we can easily qualify for there was a rapid development, too rapid to maintain over an unlimited period, but because this 'rapid development' has dropped back to 'normal development' is no sign of a collapse, especially as Los Angeles is still leading the country in many divisions of business activity."

Mr. Chapin has given a long account of industrial developments and figures to show the prosperous condition of California, reciting the growth of deposits in the State banks amounting to $30,000,000 gross during a three-month period, a large percentage of which is credited to banks in Los Angeles and vicinity. He concludes that if the facts he gives, which are susceptible of statistical proof, constitute the makings of a "busted" boom, "may our 'bustedness' never grow less."

Vote on November 4th!

IT IS not the purpose or intention of this magazine to discuss political questions or to try to influence its readers one way or another in the exercise of their personal franchise. We believe that it is the individual right of every qualified voter to vote as conscience dictates, but we do maintain that the trusted responsibility vested in every citizen demands that they go to the polls and vote.

We subscribe heartily to the efforts being made by the National Association of Manufacturers to effect a material increase in the number of votes cast this year as against the 26,000,000, or less than 49 per cent of the qualified voters, who participated in the presidential election of 1920.

The need for such a campaign to arouse the American electorate to a keener appreciation of the duties of citizenship is clearly demonstrated by the following facts:

1896—80 per cent of the voters cast ballots
1900—73 per cent of the voters cast ballots
1908—66 per cent of the voters cast ballots
1912—62 per cent of the voters cast ballots
1920—less than 50 per cent of the voters cast ballots

The slogan of the Manufacturer's campaign is: "Vote on November 4th! Vote As You Please—But Vote!

Instant Return on the Investment!

A New York mill started its new BELOIT and was making marketable 20-pound paper in counter rolls *15 minutes after the stock was turned on the machine!*

A BELOIT starts in *Producing.*

Beloit Iron Works **Beloit, Wis., U. S. A.**

ESTABLISHED SINCE 1858

On Nov. 4th, 1920, 26,000,000 people voted, BUT 27,000,000 did not. VOTE NOV. 4th. VOTE AS YOU PLEASE, but VOTE.

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 6 SEPTEMBER, 1924 No. 6

Materials Handling in the Paper Industry

By GEO. D. BEARCE

Vice-Chairman Waste Committee, T. A. P. P. I., Associate Member A. S. M. E.

THE importance of labor-saving machinery in the pulp and paper industry has always occupied an important place in the minds of superintendents and managers of mills. The increase in labor costs, due in part to industrial activities and the curtailment of immigration, has led to the substitution of mechanical power for man power wherever possible. Because American labor is high priced in comparison to European, the development of labor-saving devices in this country has been very rapid, resulting in the most extensive use of labor-saving machinery of any country in the world.

The modern balanced news mill is perhaps the best example of efficient handling of materials. Coupled with high production, this modern plant is able to produce 1½ tons of paper per man day of 8 hours in the paper mill alone, and ½ ton per man day in a balanced groundwood sulphite and news mill. Some mills are able to do even better. The newsprint industry represents a manufacturing problem in which the labor requirements can be reduced to a minimum because of the continuity of flow of its materials, while on the other hand, mills manufacturing high grade or specialty papers require much more labor and cannot possibly equal the results obtained in the newsprint industry.

Foreign paper mills, on account of their cheap labor, use more man power than plants in this country. An authentic report from Germany states that a mill making all grades including fine, wrapping, and glassine papers, employs 1,300 men and women working in two shifts with a daily output of 100 tons. This is equivalent to about 19 man days of 8 hours per ton of paper compared to 2 man days in the modern American news mill, and represents the excessive use of human labor instead of mechanical devices.

Perhaps there is no better example of handling materials in American industry than in the Ford plants. Labor-saving devices are used throughout, and from the time the crank shaft and similar parts are stamped out by the huge trip hammers until the assembled car is driven out of the plant, no materials in process are moved without the assistance of mechanical power. During a visit covering approximately three hours, I saw only two men carrying an article without the assistance of power. In this instance, it appeared to be a repair part and was doubtless an exceptional occurrence. One of the great secrets of Ford's ability to produce low priced cars is without doubt due to the super-development of the material handling problem at his plants.

A large amount of manual labor is used in the paper industry. Some mills still handle a great deal of pulpwood by hand and in many plants the coal and ashes, as well as lime and sulphur, are moved by day labor. A majority of groundwood mills storing lapped stock require for handling and rehandling a large amount of hand labor. The trucking and carrying of old paper stock, bales of rags and similar materials by hand is a common occurrence in many plants. A large number of mills making medium and fine grades of paper still use the box truck method of conveying the pulps in process.

It is not possible in every case to utilize to a marked advantage labor-saving machinery or mechanical power. However, any particular problem can be decided by simple methods of computing the cost of handling materials by manual labor, as compared to the use of labor-saving devices. The decrease in the cost of handling and conveying materials in the pulp and paper industry is within the control of the management and has a very important bearing upon the ultimate costs of the product.

In general there are two broad classifications of the

Left — Fig. 3. Pulpwood stacker

Right—Fig. 2. Pulpwood storage pile (cable used between the concrete towers instead of a trestle)

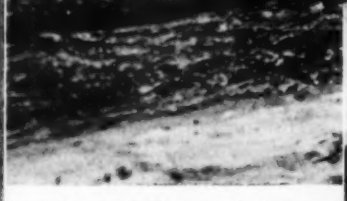


Fig. 5—Cableway unloading long logs

Fig. 1—"V" trough chain conveyor for pulpwood

Fig. 4—Locomotive crane equipped with a special grab bucket

material handling problem in pulp and paper mills:

A—Bulk Materials.

B—Materials in Process.

The majority of the raw materials used by the plant can be classified as bulk materials. If the mill manufactures its own chemical and mechanical pulp, this classification will include logs and pulpwood, lime, limestone, sulphur, coal and ashes, also lapped groundwood and sulphite lapped pulp for storage, old papers and rag stock are usually termed bulk materials.

Materials in Process include conveying and handling slush and lapped pulp in a self-contained unit and the transfer of the various pulps used in process until they leave the machine or calendars as finished paper. The rehandling, finishing, and shipping of paper may also be classed with the materials in process.

Bulk Materials

Logs and Pulpwood—Logs and pulpwood arrive at the mill from two sources: (1) water, and (2) rail. The large pulp mill units having the advantage of water transportation and storage for long logs have reduced the handling problem to its minimum cost. Usually the long logs go to the jack ladder and thence through the slasher saws. They are then either sent to the drum barkers or directly to the log storage pile. This movement is accomplished with a minimum amount of labor by means of the customary types of chain or cable and button conveyors (Fig. 1). The larger units are equipped with storage systems having two large concrete towers with or without trestles between them (Fig. 2), and the pulpwood is stored at any desired point. This type of conveying system usually has an underground cable which removes the wood from the storage pile and transports it to the mill. The entire process of storage and the subsequent movement from the storage pile to the mill requires a minimum amount of labor. During the winter months there is sometimes difficulty in loosening up the frozen piles of wood for the underground conveyor. Dynamite has been used to some extent in the past, but one mill in particular has developed a heavy drag anchor which is pulled across the face of the pile at right angles to the conveyor, thus dislodging the pulpwood so that it is easily fed to the conveyor.

Another very economical method of transporting 4-foot wood, if sufficient water is available, is by means of the water sluice. This system requires a minimum amount of power, and at the same time assists in removing dirt from the pulpwood. In some mills water conveyance is used to bring the wood right to the barking drums, and in others, the wood is transported to the groundwood mill by water.

A type of conveyor that has proved very effective is the pulpwood stacker (Fig. 3). This is applicable to 4-foot railed wood as well as wood delivered from the slashers. This system has the advantage of being quite flexible, and it is possible by this equipment to keep the various grades of wood segregated according to age, species, etc., for operating and inventory purposes.

There are a large number of secondary conveying systems used on small piles which are quite efficient. In same instances these portable units are so arranged that the wood delivered by the trestle or stacker can be piled at a greater distance, thus more completely utilizing the available storage space. They are very effective in the removal of wood from storage, because they eliminate much of the labor necessary to handle the wood from the pile to the conveyor delivering the wood to the mill.

A satisfactory method of handling 2 and 4-foot pulpwood from the pile to the mill is by means of a crane and orange peel bucket. This method is especially effective during the winter months when the wood is covered with ice and snow, because the heavy bucket loosens the wood. At the same time it lifts the pulpwood from the pile and drops it directly into the conveyor going to the pulp mill.

The locomotive or tractor crane is a valuable piece of equipment to handle both long logs and pulpwood from the cars to the storage pile. A special type of grab bucket (Fig. 4) is available and the operation of a crane of this kind has in a number of cases materially reduced the handling cost of pulpwood both to and from storage.

Another very successful method of wood handling is by means of the cableway (Fig. 5). This is especially adapted to unloading long logs that are received on flat cars. The logs are piled regularly, are effectively stored and removed from storage by the cableway, and can be kept in separate piles according to its age and kind. This is one of the best known systems for keeping a close check on consumption and inventories.

The tendency in the United States is towards the shipment of 4-foot pulpwood by rail and necessitates a closer study of the handling problem in order to reduce costs. It may be of interest and value in the paper industry to go to other fields to study the problems of handling bulk materials. For instance, the sugar-cane industry use a car tipping device that dumps the entire load from a freight car into a hopper conveyor (Fig. 6). Another device that is used in large coal operations is the rotary coal car dumping equipment. This machine revolves the entire car, unloads the coal in minutes instead of hours. It might be possible and feasible to utilize the coal dumping principle or the sugar-cane unloading idea for 2 and 4-foot pulpwood. This would only necessitate flat or open top cars which would withstand the weight and severity of the dumping operation. The necessary hopper and conveying systems leading from the car dumping device could take the wood through any desired channels.

It is a recognized principle that in all conveying equipment the simplest mechanism is always most

effective and cheapest to operate in the long run. The cost of maintenance and power are the two important

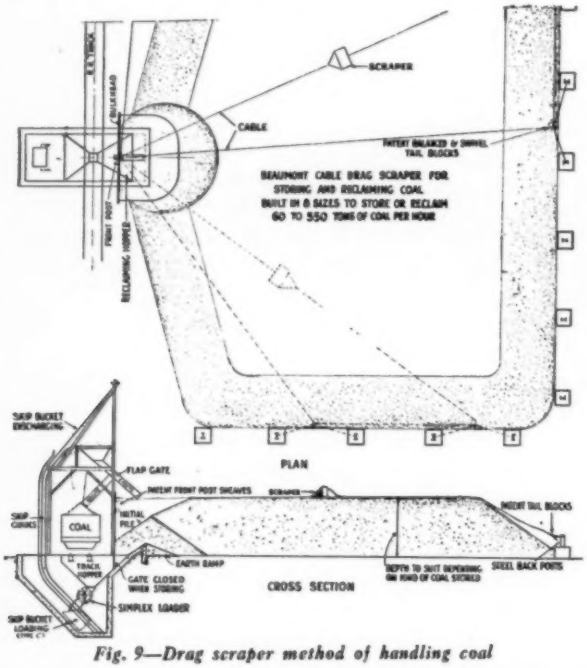


Fig. 9—Drag scraper method of handling coal

factors in the consideration of any conveying system.

Sulphur, Lime and Limestone—The usual method of receiving sulphur and lime is in box cars, and it is customary to store this material in special bins. Both sulphur and lime are unloaded by hand, and under the best conditions it is an extremely disagreeable job for the workmen because of the fine flying dust particles. The material is usually shoveled directly into a hopper from where it is conveyed either by a bucket elevator or a belt conveyor to the storage space. The large scoop shovel and the power scraping device are used for many loose materials of this nature. The scraper requires the attendance of one man while the power is supplied from an outside force, so that it is possible to unload a car of loose material of this kind in a very short time.

Air conveyance has also been used with considerable success in handling loose materials similar to lime, sulphur and clay (Fig. 7), and this method has a distinct advantage over all of the others because it eliminates the difficulty due to dust and fine particles.

Limestone is often shipped in coal cars and can consequently be handled most effectively by means of a crane equipped with a grab bucket. Moreover, material of this nature can be successfully stored outdoors and the rehandling can be done by the same type of equipment.

Coal and Ashes—The large central power stations in the country are, on the whole, more efficient in their methods of handling coal and ashes than other power plants. A good example of the efficient handling of coal and ashes is the Hell Gate Plant of the United Electric Light and Power Company, New York City. The plant is situated on the river and the coal arrives in barges where it is taken directly from the barge to the storage bunkers of the power house by means of a bucket and cableway. The ashes are removed by water sluice, go into a large pit just outside the powerhouse and are then removed from the pit by another bucket conveyor which loads them on a barge for disposal. This represents an extremely simple and economical handling system for coal and ashes.

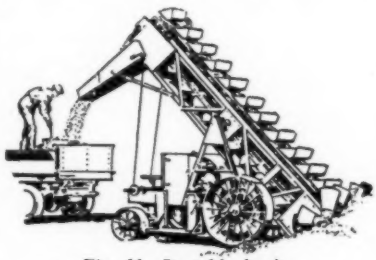


Fig. 11—Portable loader

The paper industry is, to a large extent, confronted with the storage problem of coal, which complicates the handling problem. The coal usually arrives at the plant in hopper cars, and if a trestle is available, the unloading cost is comparatively small.

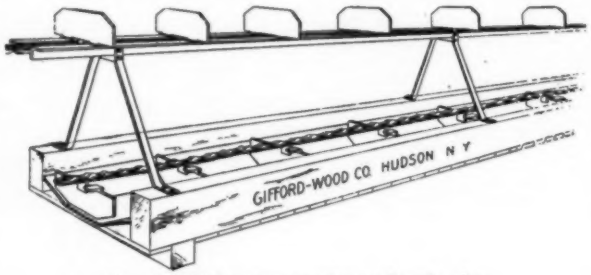


Fig. 12—Flight conveyor for coal and ashes

There are several very good systems of handling coal in paper mills, that unload, transport to the storage pile, and rehandle to the coal bunkers.

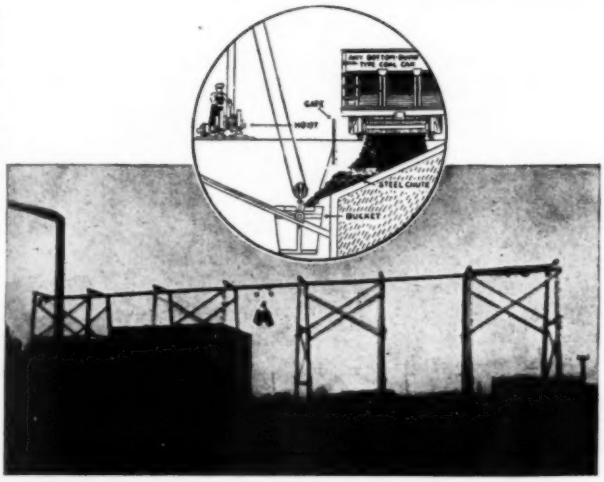


Fig. 8—Bucket and overhead conveyor method of handling coal

One of these, the "bucket and overhead conveyor" method (Fig. 8), is very flexible, because it takes the dumped coal away and carries it to either the storage pile or the bunker of the power plant. When it is necessary to use the stored coal the bucket is so designed that it acts as a drag line reclaiming unit and hoists the fuel directly to the power-house bunkers. Only one man is required to operate equipment of this type, and the manufacturers claim that coal can be handled for 4c to 8c per ton.

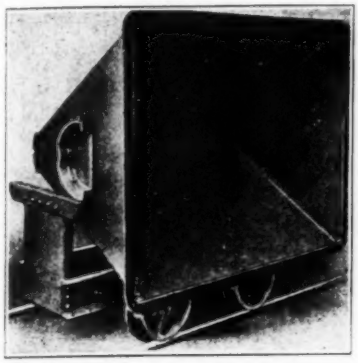


Fig. 13—Car used to remove ashes

A similar system of handling coal is the drag scraper conveyor (Fig. 9). The coal is discharged from the hopper car, is removed by the cable drag scraper to the storage pile, and can be dumped by the operator at any desired point. When it is necessary to use coal from storage, the action is reversed and the coal is brought back, dumped in a skip hoist and lifted to the coal bunker. This system has the added advantage of being equipped to remove ashes by another scoop hoist. The entire problem of coal utilization and ash removal in the boiler plant is simplified by the use of this system, and it is one of the most economical methods available.

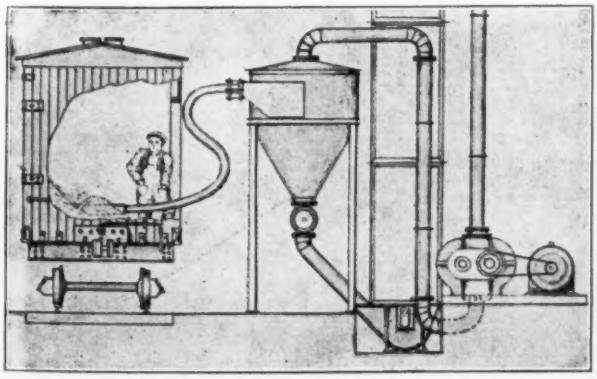


Fig. 7—Method of unloading fine materials by air

Moreover, the initial cost is reasonably low and the maintenance cost small.

Fig. 6—Car tipper and side dump car equipment used in the sugar cane industry

Another very effective method of handling coal is by means of the crane and clam shell bucket. When this system is combined with a pivoted bucket conveying system (Fig. 10), which delivers the coal to the bunkers and removes ashes with the same equipment, the coal and ash handling problem is greatly simplified.

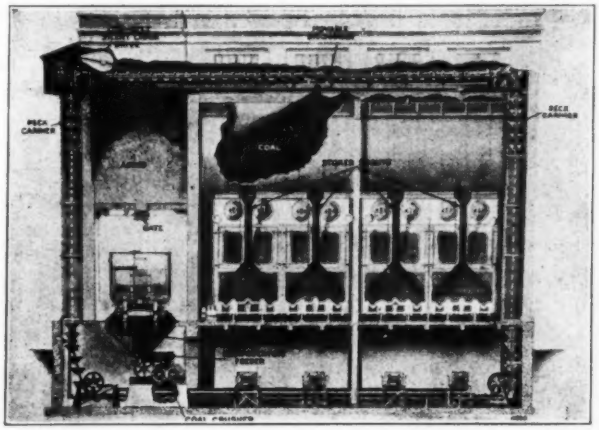


Fig. 10—Pivoted bucket conveyor system for coal and ashes

The rotary coal car dumper previously mentioned is being adopted by many large coal consuming industries and docks, because the capacity of equipment of this type is many times that of any other known method. A car dumper costs approximately $30,000, and one operator is able to unload a 50-60-ton car of coal in ten minutes. This equipment is not in general applicable to the paper industry, because of the high initial investment and the small quantities of coal to be handled.

Portable belt conveyors and various types of bucket conveyors are used to a large extent in removing coal from storage, especially when it is necessary to load cars or trucks. A number of types (Fig. 11) are so equipped that they automatically work against the storage pile and no men are required to keep the loading equipment at full capacity.

In addition to the ash conveying systems mentioned, scraper or flight conveyors (Fig. 12) are often used under favorable conditions, and the small industrial hopper car (Fig. 13) can often be successfully installed to remove the ashes.

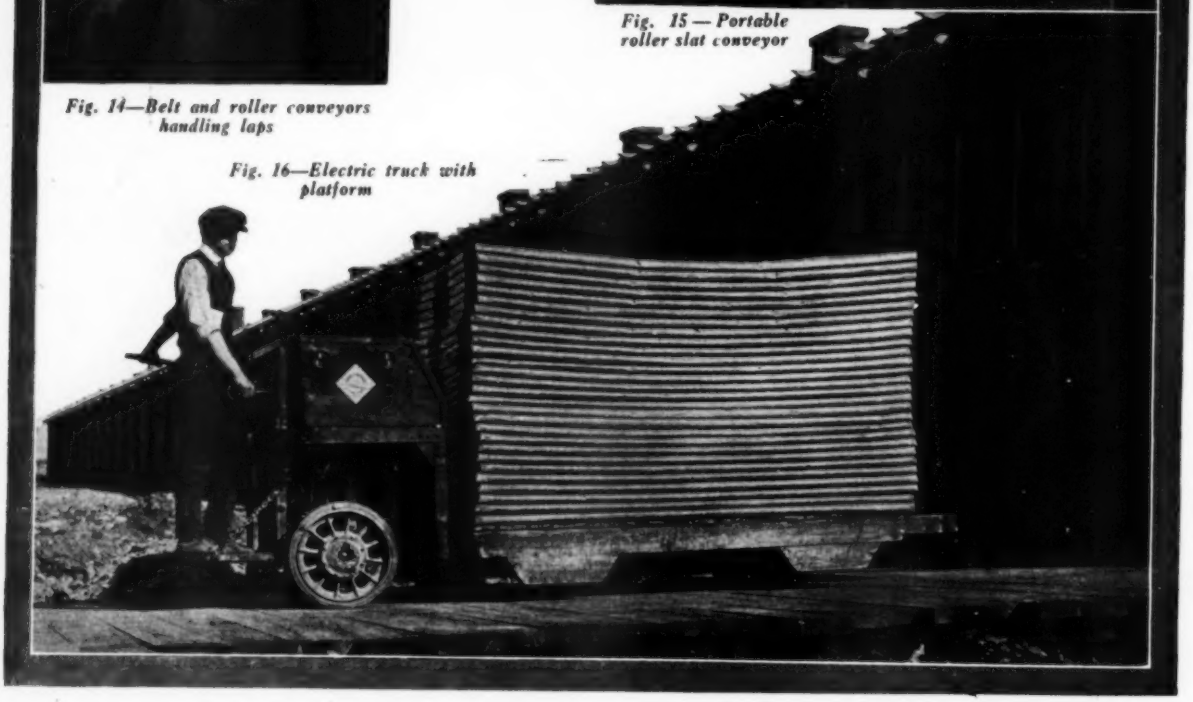
The steam jet ash removal system in recent years has been adopted by many old plants to take the place

Fig. 14—Belt and roller conveyors handling laps

Fig. 17 — Monorail telepher with electric lift

Fig. 15 — Portable roller slat conveyor

Fig. 16—Electric truck with platform



of hand labor. Some saving has doubtless been made over the old method of hand removal, but the steam jet ash conveyor is probably one of the most expensive types of mechanical handling equipment to operate. The ordinary fireman has no conception of the steam used by a steam jet conveyor, and consequently much more live steam is consumed than absolutely necessary to remove the ashes. In some plants burning coal of high ash content, 8 to 10 per cent of the entire steam generated is used to remove the ashes by a steam jet method, and consequently the actual power consumed is great in proportion to the amount of work accomplished. The removal of ashes by air is a method occasionally used, and as the principle involved is somewhat similar to that of the steam jet ash conveyor, the cost of ash removal by this method is nearly as great as by the steam jet system.

Mechanical and Chemical Pulp—The handling and storing of ground wood pulp by mills dependent upon the intermittent water supply is one of the most difficult problems in the paper industry. The labor required to lap, convey, store and rehandle pulp is an important item of expense and will often increase the cost of the pulp four or five dollars per ton.

The customary and most effective method of handling lapped pulp is by means of the belt conveyor. If this conveyor is so adjusted that it can be raised or lowered over the storage pile, the piling problem is much simplified and the cost reduced. In a system of this type the laps come from the wet machines and are taken to the storage pile by the belt, and at its end small unit roller conveyors (Fig. 14) are placed so that the handling of the laps is reduced to a minimum. If the conveyor is not designed to take the pulp to the top of the pile, secondary conveyor units are necessary. Apron or slat conveyors, both the roller and drag type, are used to move lapped pulp either to or from a pile or the car. The portable machine (Fig. 15) is used under varied conditions with good results.

Another satisfactory and economical method of handling lapped pulp is by means of the overhead rail and hoist. In this system it is customary to load the laps on a platform, which can be lifted by the hoist, and conveyed to the desired section of the storage pile, where they are then transferred.

Lapped pulp is returned from the storage pile to the mill by conveying systems similar to those used in storage. Some mills shred all of the pulp used in manufacturing lower grades of paper. This equipment is usually located near the storage pile, and after the pulp is shredded it is conveyed to the paper mill by air. This eliminates much handling labor, although the transportation of material by air often requires more power than other methods of conveyance.

The platform is an economical piece of equipment to use in the handling of mechanical and chemical lapped pulp. If sufficient storage room is available the pulp can be left on the platform and when ready for use can be moved either by means of the electric or hand lift truck, thus reducing the handling charge on lapped pulp, because two distinct rehandling operations are eliminated. The electric truck (Fig. 16) is

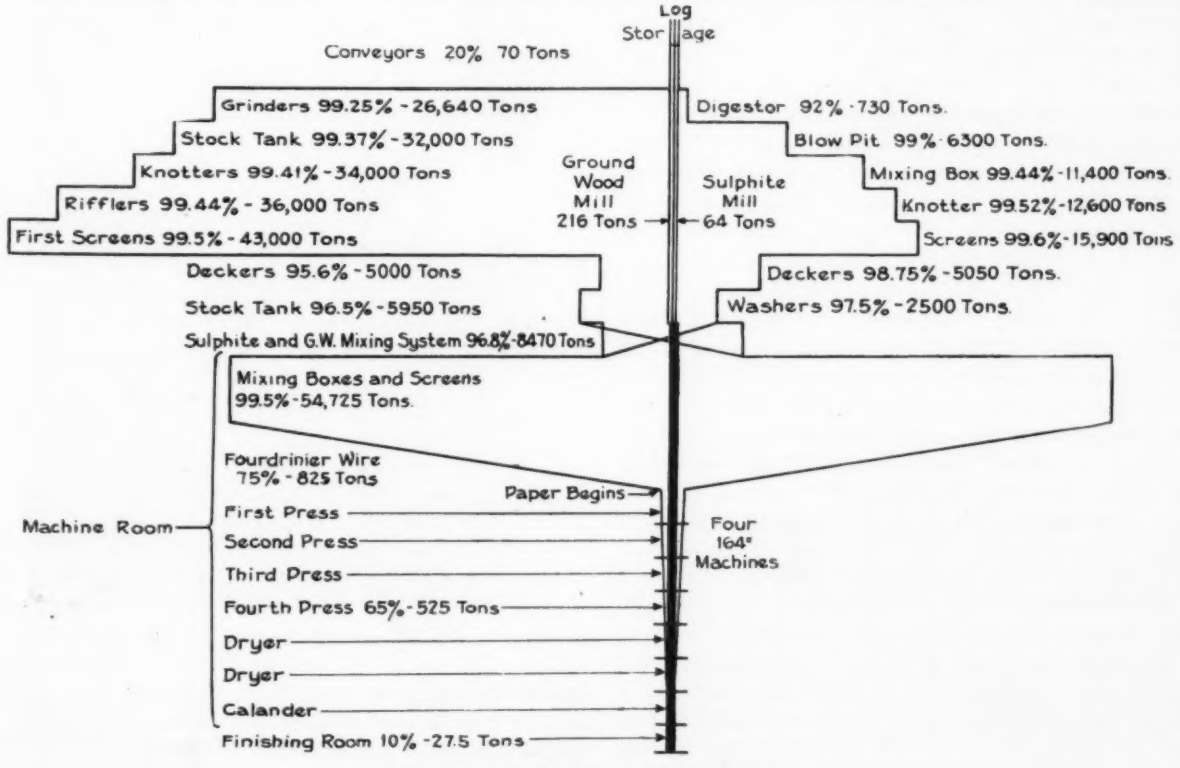

Log Storage
Conveyors 20% 70 Tons
Grinders 99.25% - 26,640 Tons
Stock Tank 99.37% - 32,000 Tons
Knotters 99.41% - 34,000 Tons
Rifflers 99.44% - 36,000 Tons
First Screens 99.5% - 43,000 Tons
Deckers 95.6% - 5000 Tons
Stock Tank 96.5% - 5950 Tons
Sulphite and G.W. Mixing System 96.8% - 8470 Tons
Ground Wood Mill 216 Tons
Sulphite Mill 64 Tons
Digestor 92% - 730 Tons.
Blow Pit 99% - 6300 Tons.
Mixing Box 99.44% - 11,400 Tons.
Knotter 99.52% - 12,600 Tons
Screens 99.6% - 15,900 Tons
Deckers 98.75% - 5050 Tons.
Washers 97.5% - 2500 Tons.
Mixing Boxes and Screens 99.5% - 54,725 Tons.
Fourdrinier Wire 75% - 825 Tons
Paper Begins
Machine Room
First Press
Second Press
Third Press
Fourth Press 65% - 525 Tons
Dryer
Dryer
Calander
Finishing Room 10% - 27.5 Tons
Four 164" Machines

Fig. 18—Stock from logs to finished paper

utilized for many other purposes around the plant and is a very useful and valuable piece of equipment to carry pulp, paper and other materials.

The dewatering, handling and storage problem of ground wood pulp is one that deserves a great deal of

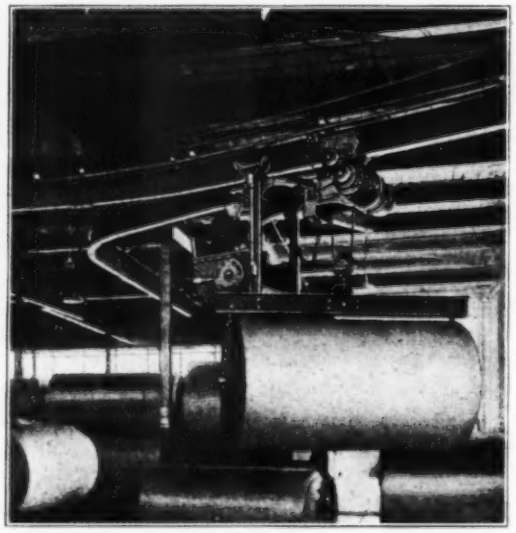


Fig. 19—Overhead track conveyor and hoist

attention, because of its great cost to the industry. Experiments in dewatering pulp are now being carried on and at some future date it will doubtless be feasible and practical to replace all of the existing wet machines with equipment that will remove the water with a minimum amount of power and labor. It should eventually be possible to deliver ground wood and sulphite pulp in the four small nodules 30 to 35 per cent dry, which can be conveyed by a belt or air to a storage bin or house. This will eliminate the vast amount of hand labor now necessary and the pulp can be returned to the paper mill in a similar manner, with the resultant saving of several dollars per ton.

Old Paper Stock and Rags—Most of the raw materials used by book, fine paper and similar mills comes to the plant in bales or bundles, and the customary method of unloading is by the hand truck. In a majority of cases it is necessary to truck this material a considerable distance to storage, and to reduce this handling expense a number of plants have installed apron or belt conveyors, which are located at the side of the car. The bundles or bales are placed upon these conveyors and automatically go to storage, where they are piled. The lift truck or the electric power truck with a special grab apparatus is often used to handle medium sized and large bales. In the large storage houses a common and efficient method of handling bales and bundles is by means of the monorail hoist and lift (Fig. 17). The bales are picked up by a special grapple attachment and placed in any part of the storehouse or mill. The arm type of package conveyor is often used to move the bales and raise or lower them from one floor to another. Under some conditions either the gravity roller conveyor and the straight and spiral shoot is used to good advantage to lower bundles.

Materials in Process

Pulp—The two general methods of conveying pulp materials in process are (1) pumping, (2) trucking. Probably the most economical system and the one that is used whenever possible by the modern news, wrapping and other mills is pumping stock suspended in water. The second method of conveying various kinds of pulp in a partially dewatered state is by means of trucks, boxes or other carriers, and is largely used in fine mills.

The modern news mill is equipped with a complete slush pulp system, and the pulp from ground wood and sulphite mills moves in a continuous stream to the paper machines. Both the ground wood and sulphite stocks are usually controlled by regulators after being deckered, so that its concentration is maintained at a predetermined figure. This stock is measured by means of mixing tanks, measuring tanks or a continuous automatic mixing and measuring system, and it is therefore possible to maintain the proper proportions of the various pulps entering into the papers.

Although this is without question the most econom-

Fig. 20—Electric truck loading rolls

ical method of conveying pulp, pumping the water and stock is an item of great importance. The water requirements in a complete slush system of a four-machine news mill making about 300 tons of paper

per day is illustrated in Fig 18. In the process of conveying stock between processes and departments the pumps at this mill have a capacity of 140,000 gal. per min., or 2,500 tons per ton of paper. This diagram indicates the complete cycle of producing slush pulp, its subsequent deckering and the changes in consistency during the paper-making process on the machine.

Many newsprint mills that use pulp in lapped form shred the laps and run the shredded pulp into their regular slush system. This method decreases the cost of handling and defibering pulp, because the power consumed is very much less and the man labor required to rehandle pulp to the beaters is practically eliminated.

Many wrapping, bag, book and other mills have adopted in part or in whole the slush system of handling pulp in the plant, and there appears to be no practical reason why this system cannot be almost universally used. The various stock regulators on the market maintain a very close consistency regulation, and the measurement and proportioning of this properly regulated stock is merely a matter of using proper tanks or systems that are available. This system has an added advantage, because it is possible to install automatic counting or measurement equipment, so that the stock consumption figures will not be dependent upon the report of the beater room crew. It can be safely stated that it is possible in a well designed slush system to obtain more accurate figures of pulp consumption by different grades, than it is by the various methods of computing the weight of lapped pulp that goes to the beater room.

The slush system is the natural trend of development in the handling of pulps in process and will eventually be used by a majority of paper mills.

Paper—The customary method of handling paper in large rolls between departments is by means of the overhead track conveyor and hoist (Fig. 19). These hoists are commonly operated by air or electricity and are extremely flexible units. The electric lift truck (Fig. 20) is being adopted with extremely good results, and handles either the large rolls of paper or sheets and bundles very effectively. The hand-lift truck is an indispensable piece of equipment for the finishing room, especially in moving sheet paper from the cutters or lay-boys.

There are many other types of equipment designed to meet the special conditions under which the mill operates. One large mill uses a monorail and telpher to carry the finished newsprint rolls from their finishing room to the hold of the ship, a distance of nearly a quarter of a mile.

Handling Miscellaneous Materials—There are a vast number of different types of hoists, cranes and lifts available that can be utilized to a good advantage in many parts of the mill to handle miscellaneous materials. The machine shop can use with good results such pieces of equipment as the small portable crane or special trucks for conveying press rolls or other large parts of the paper machine.

The motor truck is also becoming an important adjunct to paper mills and is utilized for a large number of purposes. Trailers, especially designed to carry some particular commodity, such as wood, pulp or paper, are effectively used and lower transportation cost to an appreciable extent.

Conclusion

The rapid development in material handling equipment has led to some confusion in the minds of many executives regarding the best type of equipment that will be most effective in reducing handling costs.

The Materials Handling Division of the A. S. M. E. has made an exhaustive study of this problem and has prepared definite formulas for computing the economies of labor saving equipment. These formulas are universally applicable to all conditions and differ in the usual method of figuring the savings of a particular piece of equipment, because in the comparative estimate of cost, they consider the overhead charges, investment and depreciation. A specific example of the application of this formula is quoted from the A. S. M. E. Bulletin as follows:

"As an example of an application of the formulas, assume that the handling of miscellaneous materials about a factory, which has formerly been done by four men receiving $3.50 per day each, allowing 300 days per year, at an annual direct cost of $4,200, can be done by one man operating an electric storage-battery industrial truck at a direct-labor cost of $1,050 per year, thus effecting a saving at the rate of $3,150 per year in direct-labor cost.

Assume also that through the greater promptness in moving materials and the more continuous operation of machines there is an increase in earnings, due to increased production, valued at $650 per year; also that the labor involved, being accounted as "non-productive," carries a fixed charge or burden of 10 per cent. In actual practice the plant operates 240 days per year or 80 per cent of the time. The various factors, therefore, are estimated as follows:

Debits

A—(Allowance on investment) = 6%.
B—(Provision for insurance and taxes) = 4%.
C—(Allowance for upkeep) = 20%.
D—(Depreciation and obsolescence) = 25%.
E—(Yearly cost of power supplies, etc.) = $450.

Credits

S—(Yearly saving in direct labor cost) = $3150.
T—(Yearly saving in fixed charges) = $315.
U—(Saving through increased production) = $650.
X—(Time equipment is employed) = 80%.

Results

$$Z\text{—(Maximum investment justified} = \frac{\$3150 + \$315 + \$650 - \$450 \times 80}{55} = \$5331$$

This indicates that equipment costing any sum below $5331 will earn some profit above interest on investment and maintenance."

"Assume that electric storage-battery industrial truck will meet the conditions stated and that its cost will be $2200. Then the yearly cost to maintain equipment ready for operation, exclusive of labor, will be expressed by the formula, Y—(Yearly cost to maintain mechanical equipment) = I—(Initial cost of mechanical equipment). (A + B + C + D) or $2200 × 55 per cent = $1210. Then the profit from operation of the mechanical equipment becomes ($3150 + $315 + $650 — $450) × 0.80 — $1210 = $1722. The profit V, or $1722, represents an annual earning upon the initial investment, over all items of cost, of over 78 per cent."

By the use of such comparative figures it should be possible for any organization to determine whether or not a given piece of equipment will save money, and in this way an intelligent study of the material handling problem can be made. A reduction in the handling cost of any material is, in the last analysis, a reduction in the cost of product and is a vital problem in the operation of any manufacturing concern.

Practical Laboratory Tests on Dyestuffs

By B. K. STEADMAN
Chemist, Standard Paper Mfg. Co., Richmond, Va.

ACID, basic and direct dyes are the main elements used in the paper making industry. There are various methods used to distinguish between the groups. The most accurate way to tell to which class a dye belongs, in every possible case, is by means of a chemical analysis of the dye in question. The dye in this case would be subjected to various chemical tests, such as: reaction with acids, alkalis, behavior on reduction, etc. In this way the reactions of the dye would be noted, and a competent chemist would then be able to identify the dye, and the class to which it belonged. A complete chemical analysis would require considerable time, and very often could not be made in the paper mill laboratory.

In almost every case the dyestuff manufacturer can furnish all the desired information concerning his product, but the paper mill chemist might wish to identify, in a practical way, the class to which a dyestuff belonged; e. g., acid, basic or direct.

In this short article I claim nothing original. I simply made some practical laboratory tests with dyes, on paper making fibers, to see how the individual dyes reacted; and to record actual results.

"Manufacture of Pulp and Paper," Vol. 4, describes a very good method for testing dyes. I tried this method and found that there were some dyes that had the properties of both acid and direct colors. These dyes would dye both cotton and wool direct, without a mordant of any kind being used.

I have seen in the literature that basic colors would dye ground wood direct without a mordant being used, while acid and direct dyes would not dye ground wood appreciably unless a mordant was used. Acid dyes, it was stated, would dye wood fibers only when size and alum (sulphate of alumina) were used; the alum being necessary to precipitate rosin size and enough being added to give a slightly acid reaction. The literature on this subject further stated that direct dyes would dye cotton directly in a bath containing about 10% salt on weight of cotton fiber.

The writer made laboratory dyeings of several dyes, the type of which was already known. In each case dyeings were made on ground wood without a mordant; on 100% cotton fiber stock with 10% salt and heating to 140 degrees, and on 100% bleached sulphite, using 2% size and 4% alum. I used the equivalent of 1¼ pounds of dyestuff per 1,000 pounds of fiber stock. This amount was used in each test, irrespective of the class of color used.

Actual Results

Basic dyes colored all three stocks to a considerable depth. Acid dyes, as a rule, hardly dyed the ground wood or rag stock, but dyed bleached sulphite very deep with size and alum. The direct dyes barely stained mechanical wood but dyed rag stock and sulphite.

The above results were to be expected. I found, however, that a certain type of chinoline yellow (a supposedly acid dye) would color rag stock just as deep as sulphite, thus indicating that it had properties of both an acid and direct color. Another type of chinoline yellow tested dyed sulphite much deeper than rag, showing clearly that it was an acid dye.

Conclusions

Only a small number of dyes were tested, and naturally my results are not anything like conclusive; but it would seem to me that the only way to tell for a certainty whether a dye is acid or direct would be by chemical means. This could be done only by an experienced and capable dye chemist.

Generally speaking, acid dyes will color bleached sulphite much deeper with size and alum, than rag

stock with only salt and heat. Direct dyes will dye cotton stock, with salt and heat, about the same as bleached sulphite using size and alum. Basic dyes of the strength used in my tests will stain ground wood direct without a mordant being used. Some of the dyes I worked with were direct pink, safranine, chrysoidine, chinoline yellow (two types), direct blue and acid blue.

Waste in the Pulp & Paper Industry

Labor Saving Machinery

By B. T. McBAIN
Third Vice-President, Superintendents' Association

ALL machinery, I presume, comes under this head, if you listen to the inventors or those selling it, but we are going to touch upon that kind of machinery only that should be used to save waste in the industry.

Many boiler rooms are still being hand fired, and it is a great surprise to find this being done in some of our "so called best mills." There are reasons, in some instances, but in most cases steam plant engineering firms can show good paper savings on the investment for automatic stokers not only on labor, but on fuel and efficiency of boiler as well.

Many wood rooms are still being operated with hand fed disk barkers, and some are still using the axe.

Many grinder rooms are still operated with old type of grinders—old New England two pocket grinders are in use and in one mill I saw within the last year two old Mills grinders installed fifty years ago.

There are new types of labor saving grinders, where one hand fed grinder now makes six or eight times as much as these old out of date members.

There are three or four kinds of magazine grinders, and these are saving much labor in some mills. However, in a new mill on the Pacific Coast built within the past two years they are using hand fed pocket grinders with 4′ wood, and claim to be operating with less labor per ton than the magazine grinder mills. This mill is an example of what can be done if you know how and if you try. It is equipped with labor saving devices from wood yard to grinder room and sulphite mill, and in every other department operating with less than 250 men and producing nearly 150 tons of news print per 24 hours, or less than 1⅔ men per ton; wood room, grinders, sulphite mill, beater room, machine room finishing and shipping rooms, in fact, everything.

Many news print mills are still using beaters, while there are many labor saving, satisfactory news print mixing systems in use.

Some wrapping mills are still operated with lap pulp, while much labor can be saved and costs cut materially with the use, of so called slush systems using deckered groundwood, sulphite and Kraft pulp direct from the pulp mills to the beaters.

Some paper machines are run with half as many men as other machines of the same size. Some machines rewind and make counter rolls on the machine winders; others make rewinder rolls, or jumbos, and pick them up with monorail conveyors handling to rewinder or sheet cutters as required. Some claim labor is saved by one method and others claim the opposite. I have had considerable experience both ways and prefer the latter method not only because of labor saving, but because of centered responsibility for the right kind of counter rolls, all being made in daylight under proper inspection and supervision.

The finishing rooms of many mills show more waste in labor and paper than profit should be if they were properly operated. Some fine mills are finishing their entire product into sheets at lower cost per ton than other mills making coarse papers—the reason of course is not all experienced help and supervision, but in labor saving and material handling devices.

I am not using any names in these articles either of plants where the waste abounds or of the machinery best to use.

I have not touched upon shipping, yet it is one of the most important points in the pulp and paper industry. Paper shipping is not given enough attention. Of course, today when the jobber expects the mill to mark every roll and to so arrange club cars that this order or that one unloads first, second and so on with as many as 25 or 30 orders in one car, the cost of labor at the mill in shipping is many times more than in the old days, while the jobbers' cost of delivery is nothing in comparison. Still, with inside loading sheds for all season work, where the shippers can be half way warm and they can often use original trucks from the finishers, some savings result.

However, there are mills today using 20 men to load an average of 100 tons of coarse wrappings in counter rolls and sheets, while other mills use only 10; there are mills loading 100 tons of news print with 3 or 4 men and a monorail, while there are still mills using 15 or 20 men to do the same work. Old, poorly designed, cramped shipping rooms are costly and many times cannot be modernized, but they are causes of waste and high costs just the same.

It will pay any mill manager to investigate labor saving machinery, if any of the conditions mentioned herein-above still exist in their plants.

Save waste; cut costs, and get out of the red ink.

Safe Handling of Material in Paper and Pulp Mills

Prepared by National Safety Council

HANDLING material accidents present probably the broadest safety problem in the paper and pulp industry, since virtually 80 per cent of all accidents are due to handling material hazards.

Without the proper education of the workmen in the safe handling of material, it is almost impossible to accomplish reductions in accidents. The mind of the worker must be trained to think safety at all times. Caution must be a by-word with the workmen. The education of the workmen can be accomplished through various mediums some of which are: plant meetings, bulletin boards and bulletins dealing with safety (these bulletins should be positive rather than negative, instructing the workmen what to do rather than what not to do), constant instruction by foremen and superintendents and the establishment of good example by them.

Whenever the cause of accidents may be eliminated, that is the thing to do, if practical. The elimination of accident causes is accomplished by the erection and placement of mechanical safeguards, which will protect the thoughtless or careless workman against danger.

Many serious and fatal accidents occur in loading and unloading pulpwood from cars. Patented safety car stakes have given satisfactory use which largely eliminates hazards of unloading logs from flat cars. In unloading box cars, it is important to provide substantial gang planks with upper surfaces cleated to prevent workmen from slipping. These gang planks should be securely fastened in place to prevent their slipping from the car floor.

Helpers should never stand under or near loads of logs being unloaded by locomotive cranes. The operator and his helpers should be frequently cautioned as to the dangers of this work.

As in stock and storage yards of other industries, it is important to keep material a safe distance from railroad tracks, walks and roadways. This precaution should be carefully observed in piling logs, and

Which Is the Accident Maker?

to prevent disarrangement, stakes should be used to confine them. No material should be permitted within eight feet of the center line of the tracks. One or more men should devote their entire time to keeping the stock yard clean and orderly. If all wood and other materials are kept clear of the tracks, accidents in the yard will be less frequent.

In transferring logs by chain conveyors, a safe practice is to place the conveyor so that the direction of the conveyor chain travel is toward the left of the workman placing logs on the conveyor. If this is impractical, workmen should be warned to release their grab hooks from the end of the logs before dropping into the conveyor trough.

The operator should stand at one side of the spout when feeding the chipper. A screen placed in front of the hopper spout will prevent injury to men passing, should wood be thrown out. The operating lever should be within easy reach of the man feeding the machine.

In the finishing room care is necessary in stacking rolls of paper. Non-skid chucks should always be used, and the use of wooden blocks or other makeshifts should be prohibited, as serious accidents are likely to occur in finishing storerooms as a result of stacks spreading.

A board guard should be placed behind the feed rolls of all cutters and splitters, so the paper may be passed through the roll without endangering fingers of operator. A very satisfactory method on both single and duplex cutters is to counterweight the guard for the end gears, so that it may be hoisted out of the way for the adjustment and change of gears. Care should be taken that the guard is returned to normal condition after having been raised. Care should be exercised in the operation of overhead cranes and air hoists, and loads should never be carried over the heads of workmen.

Wood hooks, pickeroons and all other hand tools should be kept in perfect repair, well pointed and securely fastened to the handles. Splintered or cracked handles should be taken out of service at once. With proper inspection and care, and prompt condemnation of improper and faulty tools, accidents from this cause will be largely eliminated.

Many serious accidents result from lack of order and cleanliness in plant operation. In a clean, orderly plant the accident record is far better than in those where order is unknown. Some manufacturers delegate the duty of keeping floors and premises in good condition to a special gang of men, and this practice gives excellent results. Waste receivers should be placed at convenient points about the mills; they should have tightly fitting covers and should be marked for "waste." Workmen soon become accustomed to their use and take pride in keeping the plant clean.

Truck equipment is a matter of great importance in every industry and especially so in paper and pulp mills. Paper rolls can be loaded and unloaded with comparative safety if trucks are equipped wtih rollways which slide into the bed frame of the truck when not in use. Always chuck truck wheels while loading or unloading, unless a type of truck is used whose wheels may be raised from the floor while the truck is being loaded. Electric trucks require careful handling and enforcement of rules governing speed and the right of way.

Some mills use small trucks (dollies) not equipped with handles. Rolls of paper are slipped over on them and pushed from one department to another. As there are no handles for pulling the trucks, operators often get on them and ride back for another load. Where this type of truck is in use, it is a simple matter to equip them with folding handles to be used in moving the empty trucks. Riding trucks is dangerous practice and should be prohibited.

Mechanical equipment is desirable for piling paper pulp rolls in store rooms, and for loading freight cars. Without such equipment accidents often result from dropping material, overstraining, etc.

It is generally conceded that no manufacturing plant can be kept in a well-guarded and safe condition without periodical inspection. Most of the large industries employ one or more inspectors to devote their entire time to this work. Usually the inspectors also supervise construction and installation of machine guards. Better results are accomplished if the safeguarding of all machinery is delegated to a special gang of workmen.

Responsibility, a Great Asset

When the mantle of responsibility falls upon a man he is clothed with a new power. Instantly he gathers new potentialities, new capacities. Nor is this exceptional. If not a possession of all, it is at least that of many of us.

This truth applies not alone to those elevated to the high places of the world. It applies to the average man in every line of work when opportunity places bigger responsibilities upon him.

There is nothing miraculous about it. The strength and capacity which are often so suddenly manifest are developed as an inner sturdiness through a long period of previous endeavor. They become evident only when the greater opportunity opens.

And, too, the "mantle of responsibility" is not flung blindly into the mob. It is usually quite carefully placed on the shoulders of the man qualified to wear it.

Occasionally we receive suggestions as to how silicate may be prevented from sticking to parts of machines where it is not wanted. From Virginia we learn that by smearing a mixture of turpentine and soap on the machines before use, silicate is prevented from adhering.—P's & Q's.

Relative Humidity and Paper Testing

Paper Testing Committee, T. A. P. P. I.

There has been considerable interest developed in the last year or so, in regard to the affect of relative humidity upon paper testing, and the Paper Testing Committee of the Technical Association has been requested by a few organizations to investigate this matter. For this reason, a careful study is being made of the problem and from time to time reports will be available.

A preliminary survey of the field indicates that a change from 65% relative humidity is not desirable until further data are available. For this reason the committee definitely recommends that until this further information is available, that we maintain the present standard of 65% relative humidity at 70 degrees temperature.

IT IS common knowledge that the amount of moisture in paper has decided effects upon various physical qualities of paper. This is so true that in certain converting processes elaborate methods are maintained for properly conditioning the paper before use. The moisture in paper is either that present as the paper came from the paper machine or that which has been absorbed from the air. The amount of moisture in the air is constantly varying, but may readily be measured as the relative humidity.

Air at different temperatures has the property of holding different amounts of moisture; but at any one temperature, air can hold only a certain maximum amount without precipitation. The percentage of that maximum amount of moisture at the temperature in question is known as the relative humidity. Relative humidity is the ratio of the actual quantity of moisture in the air to the quantity that would saturate it under identical conditions as to pressure and temperature. For example, at 70 degrees temperature and 65 per cent relative humidity, there is present only 65 per cent of the moisture in the air that could be present at 70 degrees temperature without precipitation.

During the past ten years, there has been an increasing interest in the question of paper testing and considerable progress has been made in the technique of measuring the physical qualities of paper. This increasing interest is due to two conditions—first, the desire of the manufacturer to know his product and to maintain standards, and secondly, the assurance to the consumer that he is buying the paper best suited to his needs. But paper testing, at its best, is but an honest attempt to determine in the laboratory, quickly and accurately, the value of a paper for a particular use—that is, to reproduce the conditions to which paper is exposed—service conditions.

Present Conditions of Paper Testing

Although the effect of relative humidity is well known, there are only a relatively few manufacturers or users of paper that take it into serious consideration. The number of mill or testing laboratories, large or small, that are equipped to maintain any definite relative humidity is quite small, and, with few exceptions, the standard atmospheric conditions which is maintained is 65 per cent relative humidity. This condition was not determined for this country as a result of careful technical research, but is the same as that used in Germany and England where considerable attention has been given to the subject. The relative humidity of 65 per cent is also the standard condition for testing textiles and is practically the same as the average out-door relative humidity of this country. Certain technical considerations also seem to warrant its use.

Suggested Change of Conditions

About two years ago, the Government Printing Office established a paper testing laboratory in order to maintain a close check upon deliveries of paper, and apparatus was installed to maintain uniform atmospheric conditions. Due to the belief that 50 per cent relative humidity was more nearly the average indoor relative humidity and that paper should be tested under conditions representing indoor rather than outdoor humidities, this relative humidity of 50 per cent was adopted as standard for that office.

Naturally, the action of any large buyer of paper, as the Government Printing Office, with the necessary publicity given its actions, and the purchase of paper under specifications of physical qualities that are affected by relative humidity changes, produced considerable discussion as to the desirability of changing from the present standard—from 65 per cent to 50 per cent relative humidity—in this country. The subject was of sufficient importance to have been discussed for over two hours at the Sectional Meeting on Paper Testing, held at the time of the T. A. P. P. I. Convention last April in New York. At that meeting, the Paper Testing Committee was asked to proceed in an investigation of this subject, according to the following resolution:

"That the Technical Association, during the next year, attempt to make determination of the percentage variables and the effects of testing paper at 50 and 65 per cent relative humidity, and others, if it seems advisable."

As the results of individual statements shown, the

Sectional Meeting, with one or two exceptions, was unanimous in withholding judgment as to the advisability of any change in the standard until further data were available.

At a meeting held in Washington in June of this year, the Advisory Committee of the A. P. P. A. for the Paper Section of the Bureau of Standards specifically requested the Paper Testing Committee of the T. A. P. P. I. to continue its investigation of this subject, and report as soon as possible, in co-operation with the Bureau of Standards. A sub-committee of the Paper Testing Committee has therefore developed a program and is planning to have a report available for the annual meeting next February.

Service Conditions

As previously stated, paper is tested for two purposes: by the manufacturer to maintain uniformity, and by the user to determine whether a particular sheet will have the proper qualities for the use intended. With practically only one exception, almost any relative humidity, within reasonable limits, would be suitable to the manufacturer. To the user, however, this is not so, for paper is used under varying conditions. Since there are many types of paper, it is quite obvious that the conditions under which most paper is used, should be adopted as standard. It certainly is not feasible to have different standards. Therefore, laboratories should maintain, as standard, that relative humidity which approximates to the needs of the majority of the users.

Statistics of production of various classes of paper appear in "The Paper and Pulp Industry" for February 15, 1923, which are as follows: News, book, board, wrapping, fine, tissue, hanging, felts and others, all others. The first five classes are of importance in connection with this subject. The most commonly used atmospheric conditions for these classes are as follows:

Newsprint. Present day practice is tending toward higher moisture content in newsprint. Attempts are being made to maintain a moisture content of seven per cent or higher, and, in some cases, the press rooms are artificially humidified to maintain this desirable working condition. Published data indicate that most paper, tested at 65 per cent relative humidity, contains seven to seven and one-half per cent of moisture.

Book Paper. Strength requirements of book paper, except in the case of the high grades, are only sufficient to carry the paper over the presses and to resist the folding and binding operations. For offset work, for good binding and for large scale production of printing, the atmospheric conditions in many plants are being modified artificially to produce the more favorable higher relative humidities. Competitive conditions of printing require cheap paper and the most favorable conditions for converting the paper are therefore necessary. Practical experience in the larger plants indicates the need of higher relative humidity conditions.

Board. The initial strain upon boxboard is at the time of the converting process when the box is formed. Better boxes are made when the board carries the higher moisture content; that is, the board folds and forms better under these conditions. Data are not available as to present atmospheric conditions in box factories, but a considerable portion of the life of a box in service is exposed to out-door relative humidity conditions, which, of course, average about 65 per cent.

Wrapping Paper. As the name implies, the chief function of wrapping paper is as a protection to various commodities. And even a casual observation indicates that practically all wrapping paper is under the greatest strain when exposed to out-door relative humidity conditions.

Fine Papers. The statistics of production for the years 1919-1922, as referred to above, indicate that for those four years fine papers represented only 5.14 per cent of the total production. Unpublished data indicate that rag content bond and writing papers, as well as sulphite papers, can be graded at either 50 or 65 per cent relative humidity, except possibly in medium grade rag-content papers that are tub sized.

This grading includes the various physical testing instruments now used, as Mullen, tensile, tear and folding machines. The results obtained on all instruments, the folding machine, and possibly the tearing test excepted, tend to show a higher test at 50 per cent relative humidity than at 65 per cent. The tests on the folding machine at 50 per cent more truly indicate the folding quality of the fibre, especially in the case of glue tub-sized papers. Thus for probably less than two per cent of the paper produced is the lower condition of 50 per cent relative humidity desirable. It is at present still questionable whether the folding machine should be taken as the ultimate criterion for changing the test conditions. The accuracy of the folding machine, varying from twenty to thirty per cent, is the big objection to using the folding test as the standard for grading. Other physical tests, taken together, give as valuable information and the results are not, certainly, so erratic as in the case of the folding test.

Effect of Humidity Upon Paper

There are sufficient published data to warrant certain general conclusions as to the effect of humidity upon paper. These conclusions do not hold for all kinds of paper and are not to be relied upon for factors in specific cases. The following quotation from an article appearing in the Paper Trade Journal for April 13, 1923, and being published by the Bureau of Standards, gives a general idea of the effect of humidity upon paper:

"Moisture content increases (at varying rates) with increase of relative humidity.

"Ream weight and thickness behave in a manner similar to moisture content.

"Expansion and contraction with humidity variation is greater in the cross than in the machine direction, and the magnitude of the effect depends on the grade of paper.

"Tensile breaking strength and bursting strength increase up to the range of 35 to 45 per cent relative humidity and decrease above this range. The amount of change depends on the kind of paper. The per cent change for breaking strength is practically the same for machine and cross directions.

"Elongation increases continuously with the moisture content.

"Folding endurance increases over the observed humidity range. There is little concordance of results in machine and cross directions. The variations from one grade of paper to another are most marked.

"Tearing strength increases with relative humidity over practically the entire range of ordinary humidity changes, and its behavior depends on the kind of paper tested.

"Of the strength qualities considered, bursting strength is least affected by humidity changes. Breaking strength and tearing resistance assume an intermediate position, while folding endurance is influenced most."

These conclusions, based on accurate data, and similar summaries of data from other sources, indicate that the effect on the Mullen test is relatively small, while in the case of the folding test, it is not only high but also quite erratic. Furthermore, an allowance of from twenty to thirty per cent should be allowed on all folding test results, due to the variations between different machines and results on the same machine.

Program of Investigation

A definite program of research and investigation has been adopted by the Paper Testing Committee, which consists essentially in the collection of data to be used; first, in determining whether it will be feasible to change from 65 to 50 per cent relative humidity, and secondly, in presenting a final report of all available information and a definite recommendation to the Technical Association.

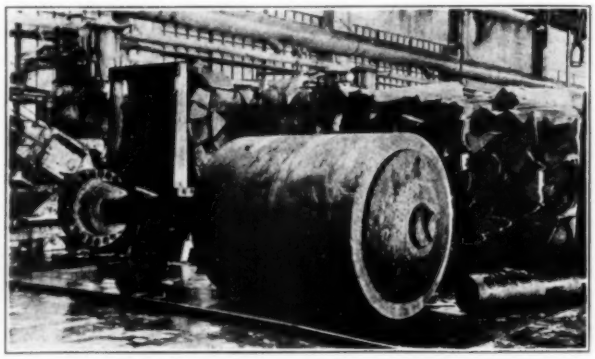
Tentative Recommendation

It is definitely recommended that, until further data and information are available, that no change be made from 65 per cent relative humidity as the standard atmospheric condition for the testing of paper in this country. Further data are being collected as rapidly as possible and all phases of the subject are to be investigated. But at this time, it is not believed that the folding endurance test is the chief criterion of paper in general or that the requirements of 2 per cent of the paper produced should warrant a change in standard relative humidity, unless further data indicate its desirability.

Cause of Grinder Shaft Breakage

By W. A. MUNRO

THE first breakage of 10-inch grinder shaft used in a three pocket, four foot grinder caused a lot of conjecture and many reasons or guesses were advanced to account for it. They ran all the way from a flaw in the steel to the uneven torque on the shaft caused by pulling two pockets and then three. However, when the second shaft broke in the same place shortly after, a more determined effort was made to ascertain the true cause and endeavor to remedy it.



Broken shaft from crystalization on 48-inch pocket grinder

All the grinder shafts in operation were examined, and at the same place near the flange threads, very fine lines were found extending all around the circumference of the shaft. In some of the older shafts the lines were more pronounced than in the newer ones. Unused shafts were free from any trace of these lines.

The grinders are driven by a 1000 H. P. motor direct connected by means of a flexible coupling. The grinder shaft is supported by and revolves in wood bearings lubricated by water of 40° F. The stone and flanges are immersed to a certain depth in stock of about 180° F.

The part of the shaft running in the bearings is always quite cool and the reverse is true of the shaft near the flanges and inside the stone. The cracking or breaking took place at the point in the shaft where the heat from the stone and flanges met the cold from the bearing water. This meeting of the hot and cold particles resulted in the crystallization of the shaft at this point and its resultant breakage.

To remedy this, whenever a stone is changed, the shaft is annealed by being heated to a cherry red in a charcoal oven and then allowed to cool gradually. When this is done, all the lines and cracks disappear, leaving shaft in good condition.

Cost and Factory Accounting—Part VI

By H. M. GRASSELT
American Writing Paper Company

THE Drainer Inventory sheet (Fig. 5) contains a column for the entry of adjustments. Even with frequent and careful tests, there will now and then occur slight differences between the calculated and the actual weight of half stuff in the drainers. If discrepancies between the two are found, the overage or shortage, whatever the case may be, is entered into the column provided for that purpose and the amount posted to the inventory adjustment account. At inventory time the balance in the inventory adjustment account is to be carried directly to the Profit and Loss account.

Stock lifters should be taught, to load half stuff cars uniformly. If that is done, there will be very few discrepancies between calculated and actual weights of cars of half stuff.

Resumé: The cost details of half stuff, as collected through forms two, four and five respectively, may be summarized as follows:

Bleach No.

Gross cost per 100 lbs. of baled rags		$000.00
Deduction for Recoveries per 100 lbs.		000.00
Net cost of rags per 100 lbs		$000.00
Cost of Rag Room shrinkage per 100 lbs		000.00
Cost of dressed rags per 100 lbs		$000.00
Cost of Conversion (per 100 lbs.):		
Rag room	$00.00	
Bleach Boiler	00.00	
Washers	00.00	
Cost of calculated invis. waste	00.00	000.00
Total cost per 100 lbs. of rag half stuff		$000.00

The thus determined cost per 100 lbs. of dry rag half stuff includes every expenditure for materials and conversion.

The vital importance of rag room statistics for cost purposes, as explained in preceding chapters, is evident. It is obvious, that the management, on hand of these records, can introduce economics and effect savings that without systematical recording would be impossible. These records show the manufacturer the various details of rag processing, determine shrinkages and point out, which grades of rags may be used with best advantage. The recorded cost of sorting will reflect the efficiency of the rag room help and accounting for salable recoveries eliminates another factor of careless wasting.

Mills that operate Pulpers should introduce a "Pulper Report," that is, a form similar to Fig. No. 2 —Bleach Report. This form must show, whether the pulpered stock consisted of purchased shavings or mill broke, unit cost and value. Furthermore, proper entry of the cost of pulpering (departmental cost)

Date Ordered..... Date Promised.....

PRODUCTION ORDER No.....

Grade.....
Watermark.....
Color.....Machine No.....

Item	Quan. Ordered	Wove or Laid	Mach. Size	Fin. Size	Fin. Wt. 500 Sheets	Run. Wt.	Basis Wt.	Pounds to Make

Customer.....
Sales Order No..... Customer's Order No.....

MACHINE DIRECTIONS

Machine Sizing..... To be made.....

Quantity Made

Date	Rolls	Pounds	Date	Rolls	Pounds	Date	Rolls	Pounds

Fig. 6. (consisting of 6a, copy one; 6b, copy two and copies 6c and 6d respectively) Size 8 x 11

FURNISH PER BEATER

Quantity	Materials	Quantity	Process Supplies
			Rosin Size
			Alum
			Starch
			Glue
			Filler
			Color:

Beating Directions
No. of Engines to be furnished:..... .....Supt.

Fig. 6b. (Lower part of second copy of Fig. 6)

BEATER REPORT TO PRODUCTION ORDER No..... **Sheet No.....**

Grade..... Color..... **Total No. of Sheets....**

Total No. of Engines		Boating Time			Rag Half Stuff						Sulphite Soda Pulp				Paper Stock		Process Supplies				Colors		
					Grade		Grade		Grade		Grade		Grade				Alum	Size	Glue	Filler			
Date	Beater No.	Start	Stop	Time	Drain. No.	No. Cars	Drain. No.	No. Cars	Drain. No.	No. Cars	Lot No.	Quantity	Lot No.	Quantity	Lot No.	Quantity							

Fig. 7. 9 x 14

must be made in order to determine the exact cost per 100 lbs. of dry pulpered stock.

2—Rough Paper Department

The preceding processes have been recorded by Bleaches and Drainers respectively. Beginning with this department, the various phases of manufacture will be governed by a "Production Order," that is, a written order authorizing the manufacture of a certain quantity and grade of paper.

Production Orders may be classified in Stock Orders and Customers' Orders. The former being issued to replenish stock lines, the latter to manufacture goods ordered by a customer. Both should be covered by a Sales Order number.

The interspersed Fig. 6a represents the first copy of a Production Order, Fig. 6b the lower part of the second copy of the form. Copy number three is forwarded to the finishing room foreman and copy number four retained in the office for the entry of cost data. The latter two copies will be described in subsequent chapters on the subjects of finishing costs and summaries respectively.

The first copy of the Production Order is given to the machine room foreman. It contains all necessary directions for the making of that particular lot of paper. At the bottom of the copy are a few columns ruled off for the entry of the number of rolls made and their aggregate weight. Each machine tender has to enter his production at the end of his "tour."

The upper part of copy two is logically the same as that of copy one (Fig. 6a) down to the line above "Machine Directions." The lower part (Fig. 6b) is used by the superintendent for the entry of the formula for that particular furnish and given to the beater engineer.

Of course, the color formula will undergo now and then some slight changes, according to the condition of materials. In such case, the beater engineer or color man should change the original quantities, inserted by the superintendent, to the quantities actually required to match the sample.

The beater engineer should receive his copy of the production order at least one day in advance, so that he may schedule his work accordingly and procure the raw materials that are required for that particular furnish.

Beater Furnish. A suitable form is to be provided, to record all materials and process supplies. It is obvious, that a new beater furnish sheet must be issued when a new production order is put on. The beater furnish number is to be the very same as the Production Order number. A form similar to the interspersed Fig. 7 will cover all requirements and not burden the beater engineer with excessive clerical work.

Half stuff is entered by the number of cars used in each beater. The cost clerk, having the average weight per car of half stuff in his drainer inventory,

will later on convert the number of cars used in the furnish into pounds, and use the cost determined and available in the drainer inventory sheet for his further calculations. Sulphite pulp, soda pulp, etc., are to be entered by bales or laps. Since the dry weights of all grades of pulp are on hand and have been checked by accurate tests, the cost clerk has also here the correct dry weights of the respective materials available for the determination of the cost of furnish.

Wood Preparing Equipment

By HARRY E. WESTON

Assistant Professor of Pulp and Paper Manufacture, The New York State College of Forestry, Syracuse, N. Y.

This is the sixth installment of Mr. Weston's article on Wood Preparing Equipment. The series will continue through succeeding issues of this magazine.

Splitters

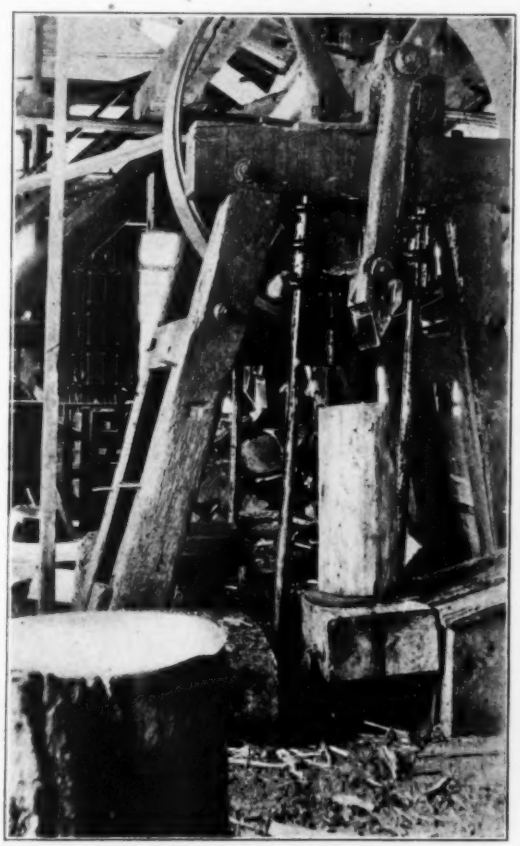
IT IS sometimes necessary to handle wood of larger diameter than can be fed into the spout of the chipper or into a grinder. Machines employed to reduce these large diameter blocks to suitable size for proper utilization are designated as splitters. They are simply mechanically operated axes of powerful construction and may be one of two types—vertical or horizontal.

The vertical type of splitter is often built upon a heavy framework of Georgia pine, oak, red pine, or any other timber that is sufficiently strong to resist the terrific jolts received during operation. Details covering the construction of the framework as well as other parts of the splitter are brought out in the accompanying illustration. The timbers, forming the frame, should be carefully tenoned and bolted together and should be well braced, since the framework gives support to the working elements.

In this type of splitter, two cutting blocks are frequently located opposite each other on the frame. Each cutting block consists of a cast iron sill plate supported by a large timber and is located directly under the axe. The accompanying illustration shows a double ended splitter in which there are two sill plates. The faces of these sill plates are corrugated or roughened to prevent the oversize blocks from slipping during the splitting operation. The timber base extends across the entire machine between the vertical guides for the axes, while the cast iron sill plates or splitting blocks, which are heavy circular discs, set outside the main frame.

The axes are tempered steel and should be designed to force apart not only wood blocks of comparatively straight grain but also wood that is knotty and gnarled. Different methods are used to fasten the axes. They may be dove-tailed and fastened to steel crossheads which slide in vertical guides, or they may be attached directly to connecting rods. The crossheads in the second case are attached above the axes to the connecting rods and likewise fitted to suitable guides. The heavily designed connecting rods are usually of malleable or cast iron.

The upper end of a connecting rod is attached to an eccentric or crank disc, which in turn is fastened to a crankshaft. The crank discs or eccentrics determine the length of stroke of the splitter, which is often from eight to twelve inches. In the older types (as shown in this same illustration), the drive arrangement consisted simply of a pulley of large diameter mounted on a crankshaft and driven by a belt from



Vertical splitter installation

any convenient source of power. The more recent splitters of this type have a spur gear of large diameter mounted on the crankshaft, which is driven by a pinion gear from a countershaft. The countershaft also has mounted upon it the main drive pulley which may be belt connected to any available source of pow-

er. The R. P. M. of the drive pulley and the gear ratio are so determined that the axes are given 30 to 90 strokes per minute. The eccentrics are placed upon the crankshaft in such a way that the axes strike alternately.

Courtesy Waterville Iron Works.

Vertical splitter with iron base

Such equipment has been built to handle wood bolts from approximately 24 inches to 48 inches in length. The ordinary vertical splitter of this type is designed for splitting two foot wood, but it will handle wood shorter or slightly longer. It is only necessary, if the wood blocks are shorter, to build up the base or sill plates with additional short sections of wooden blocks which have been strengthened by iron ferrules. The longest blocks that can be handled would be those whose length does not exceed the distance from the top of the sill plate to the bottom of the axe at the uppermost part of its stroke.

Single end machines or splitters with only one axe are also built for use in plants where there is insufficient work for a double ended machine.

Vertical splitters with iron frames or bases have also been developed. They are designed upon the principle of an eccentric drive functioning to a direct connected rocker arm which carries the axe or splitting knife.

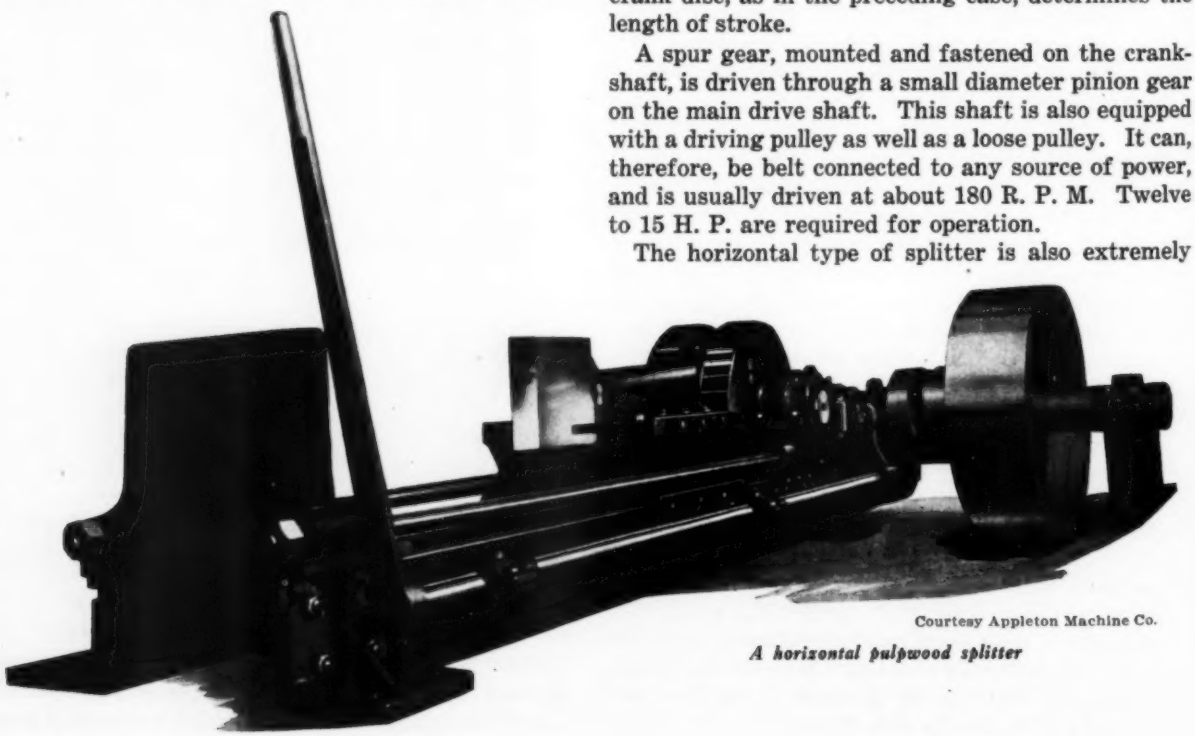
The general construction of one of these is shown in the illustration which also gives some idea as to the method of operation.

Such a splitter is frequently built in two sizes—one for two-foot wood and one for four-foot wood. The four-foot wood units can also be used to split two-foot lengths by the use of an adjustable foot plate.

All the moving parts are mounted on a cast iron base. The cast iron rocker arm must be capable of withstanding unusually severe operating conditions, due to the work that such a unit must do. The rocker arm is connected through a connecting rod to a crank disc mounted upon a crankshaft or it may be connected to the crankshaft by means of a specially designed eccentric or connecting rod. The eccentric or crank disc, as in the preceding case, determines the length of stroke.

A spur gear, mounted and fastened on the crankshaft, is driven through a small diameter pinion gear on the main drive shaft. This shaft is also equipped with a driving pulley as well as a loose pulley. It can, therefore, be belt connected to any source of power, and is usually driven at about 180 R. P. M. Twelve to 15 H. P. are required for operation.

The horizontal type of splitter is also extremely



Courtesy Appleton Machine Co.

A horizontal pulpwood splitter

simple in design, consisting usually of a suitable base, splitting block, axe and means of actuating. The power may be applied from a motor through a belt connected to the motor pulley and the driving pulley of the splitter. One design of horizontal splitter, as illustrated, has a base made up of two heavy steel channels securely bolted to cast iron cross bars. Upon the channels are mounted heavy cast iron gear shaft bearings which are made to receive both gear and pinion shafts. A heavy cast iron splitting block, the face of which is corrugated so as to prevent the wood from slipping when the machine is in operation, is securely mounted on the channels opposite the driving end. Two steel tie rods connect the double shaft bearings and splitting block.

The axe guides are mounted on the channel frame and are fitted with steel slides so that the axe thereby has a bearing surface on the two sides and bottom.

The axe, made for rough usage, has a steel cutting edge and is machined to fit the steel slides and bottom bearing surface and moves in the slides with a steady, accurate, reciprocating motion.

Such a splitter may have a stroke of almost any length depending on the size of the gears and the radius of the crank pin. The stroke is usually 15 inches for splitting four-foot wood. Two cast iron crank gears shrouded on both sides of the teeth are used. They are driven by two cast steel pinions of such a size that the gear ratio is one to three—that is the pinion gears make three times as many revolutions as the crank gears. When applied to four-foot wood, a splitter of this type is frequently driven by a 40-inch pulley operating at 110 R. P. M. The number of strokes of the splitter could be easily computed by multiplying the R. P. M. of the driving pulley by the number of teeth in the pinions and dividing the result by the number of teeth in the crank gears.

Number of Strokes of Splitter = R.P.M. of driving pulley × No. of teeth in pinions ÷ No. of teeth in crank gears.

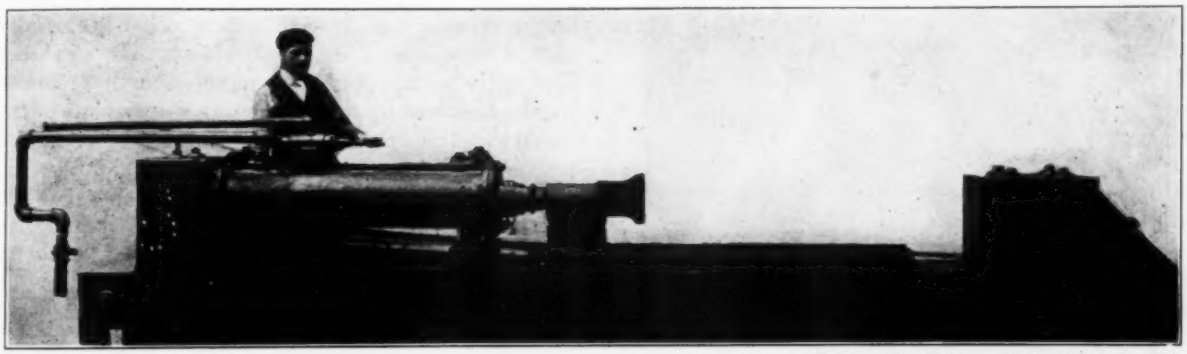
A very strong cast steel connecting rod is machined to fit the crank pin, and the crosshead pin in the axe.

Under ordinary conditions, a four-foot splitter will not consume over 3½ to 4 H. P. A 7½ H. P. motor will generally furnish ample power, although in some cases slightly larger motors are deemed necessary. Electric motor drive is convenient as the motor runs continuously during the splitting operation while the axe may be stopped at any time by simply shifting the hand lever which operates the clutch.

Several designs of splitters in which the axe is driven through air or steam pressure, are also in use. They are all approximately the same in fundamental design, varying only in details. In some instances the diameter of the logs that can be split is limited because of the design of the splitter, while other splitters will handle practically any diameter of block. Such splitters are frequently made to handle wood from about four to six feet in length.

A steam driven splitter is herein illustrated.

The machine is composed of two timber stringers upon which is mounted a heavy cast iron cylinder and the necessary auxiliary equipment for the operation of the axe. The bore of the cylinder varies in different designs from 6 to 10 inches while the stroke is commonly 48 inches.



Courtesy The Waterous Engine Works Co., Ltd.

Steam driven log splitter

The cylinder is operated by a simple four-way automatic valve which permits cushioning of the piston on the return stroke. The splitter is, therefore, under full control of one man at the throttle lever.

The axe is tempered steel and is dove-tailed to a steel crosshead which is provided with slides that are attached to the stringers.

Chip Separators

It is common practice in some mills to pass the entire flow of chips from the chipper through a chip separator so as to reduce the carded and nested chips to suitable size for screening and thereby equalize as far as possible for screening purposes the size of the chipper product. Knots, slabs, sheaves, etc., are not supposed to be broken down in the separator, but should pass over the screen where they should be rejected and then conveyed to a crusher for reduction.

Prior to the development of chip separators, two general methods of chip treatment appeared to be in vogue. In one case all of the chips from a chipper

were put through a breaker or crusher and then screened in which operation the sawdust and oversize material was removed. The sawdust was usually considered as waste while the rejected oversize material was given further treatment by returning to the crusher for another passage through it or by reducing

Courtesy Ryther & Pringle Co.

Chip separator showing spiked face

it in a rechipper. Such procedure subjected a considerable portion of the chips already satisfactory for cooking to the action of the crusher and also caused excessive loss of sawdust.

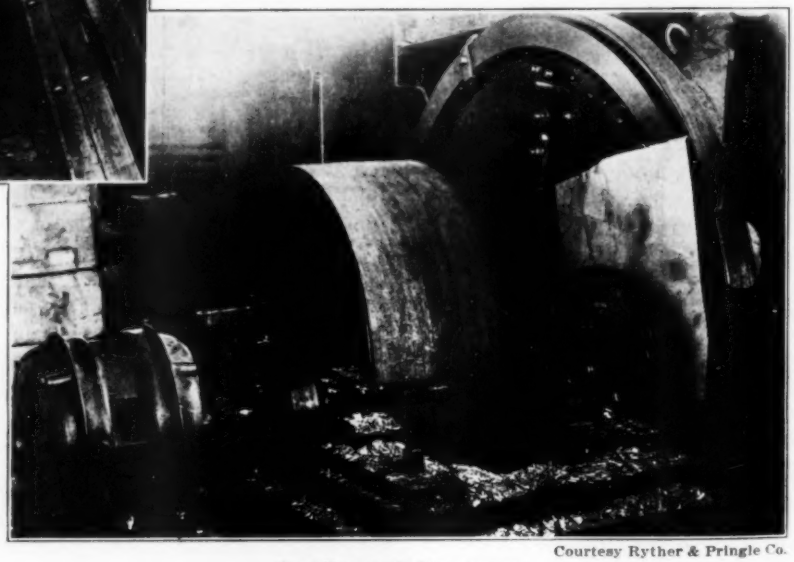
This method of treatment was therefore superseded in many mills by the second method which passed all of the chipper product directly to the screen and submitted only the oversize rejects to the action of the breaker or crusher. A large portion of the rejected material in this case was in the form of cards or nested chips in suitable for mfor cooking, which, if broken down in the ordinary type of crusher along with the knots, slivers, etc. ,would tend to increase the sawdust loss. This practice is still in very common use and appears to be proving quite satisfactory.

There was, however, a need in some instances for equipment to separate the chip cards and nests before the screening operation with the result that there have been developed several types of chip separators.

Wood's Ideal Chip Separator

Wood's Ideal Chip Separator is a very simple piece of equipment made up of a steel casting in the form of a shaft and a disc to which a number of fingers are either bolted or integrally cast. The relation and comparative size of each of these parts is shown in the illustration showing breaker with the spikes or fingers located in its face. The disc is 24 inches in diameter and two inches thick. The fingers, which have been developed as the result of experiments, are approximately four inches long. The accompanying illustration shows the installation of a breaker in which the fingers are bolted to the disc—but now they are normally cast as a part of the disc itself. The disc and shaft are attached to the chipper frame, through suitable bearings, in such a way that points on the breaker disc clear all bolts or other projections on the back side of the chipper disc. The clearance is slightly larger than the amount of endwise movement as allowed by the failure of a safety plate of the chipper. The breaker disc is centered as nearly as possible with the chipper knives.

The separator may be driven by means of a belt through a countershaft or by a directly connected D. C. motor, which makes it possible to readily change



Courtesy Ryther & Pringle Co.

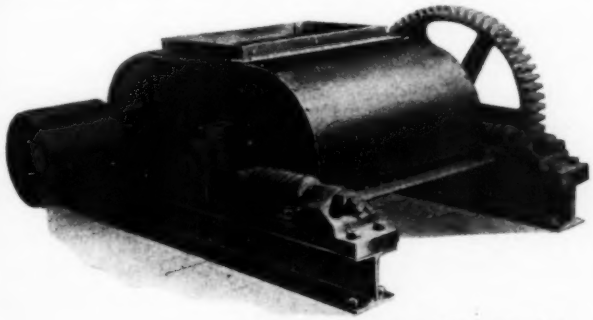
Installation of chip separator

the speed should variation in the wood warrant it. However, the uniformity of the wood is generally such that the separator is frequently directly connected to an A. C. motor and operated at a constant speed opposite or counter to the direction of the chipper disc. This speed is predetermined to separate the chips from chip cards of green wood. In some installations a 5 H. P. motor operating at 600 R. P. M. is used. In some cases, as for example, when dry or frozen wood is being chipped, the separator disc may

remain stationary. The spiked disc exerts sufficient reducing action through impact and friction to break down carded chips of wood in this condition.

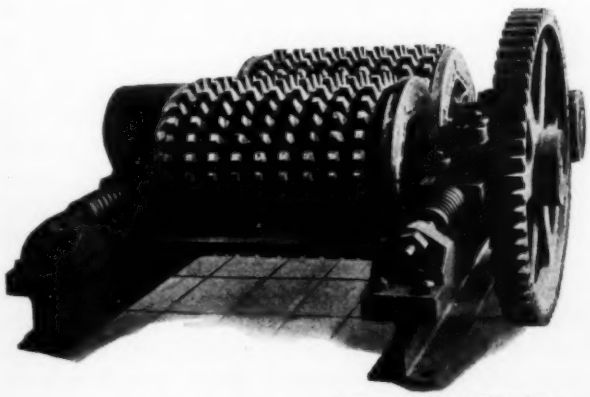
Ryther Chip Separator

The Ryther chip separator closely resembles, in general appearance, the ordinary type of "Twin Roll



Courtesy Canadian Ingersoll-Rand Co., Ltd.

Assembled view of Ryther chip separator showing general construction and arrangement of hood and feed opening



Courtesy Ryther & Pringle Co.

Ryther chip separator with hood removed to illustrate construction of rolls and spring relief mechanism

Spring Relief Coal Crusher" as can be seen from studying the illustration. Unlike the coal crusher, however, the two rolls operate at different speeds (relatively four or five to one) rather than at the same speed. This results in the chip cards being drawn apart producing a separation of the chips with comparatively little crushing effect.

The frame is built up of structural steel H-beams faced with steel flats and braced with steel cross bars. A series of toothed cast steel staves, bolted to spiders, which are secured to the roll shafts, make up the rolls. They are further secured by shrinking a steel ring over them at each end. The shape and size of the roll teeth was determined by experiment. The rolls are about 19¾ inches in diameter and 26 inches in length. The shafts are supported by cast iron bearings lined with babbitt metal. The bearings which support the driving roll shaft and pulley are bolted directly to the frame, while those carrying the driven roll are free to slide along the frame. This arrangement permits the separation of the rolls should any large pieces of wood, iron, or any foreign matter enter the machine with the chips. These bearings are held in alignment by heavy coil springs placed between the bearings themselves and the brackets attached to the ends of the frame. The tension of the springs can be varied through the adjustment of screws provided with the brackets.

The pulley on the driving roll shaft is driven at a speed of about 350 R. P. M. About 10-20 H. P. are required to drive the machine with an approximate capacity of 15-25 cords of wood per hour.

Forest Goes to Mill—Soil Goes to Sea

This gully advancing on the little southern homestead owes its start to the removal of the trees which once covered the slope. Having lost its forest cover, this land is fated to be stripped of its fertile soil. The water running from ordinary rain and snowfall is rapidly eroding it so as to make cultivation impossible. Bare watersheds of this type allow water to pour into streams so swiftly that violent flood stages alternate with long low water stages. The earth carried from the gullies by the water necessitates constant dredging of navigable rivers and of harbors at river mouths. Silting in time ruins the finest power or irrigation development.

Reforestation is an effective means of controlling

Photograph by U. S. Forest Service.

run-off water and of reclaiming land which has been ruined by gullies and washes.

The seedling forest begins to pay for its planting when only a few years old by holding back water in the spongy leaf mulch on the ground.

It isn't well to have too much humility. The man who gets into the habit of refusing to take credit for the good work he does is quite apt to be surprised when he discovers that people accept his denials as the truth. It is much better to be like the little girl in the old story who, when she was asked, "Who made you?" replied, "God made me that length," indicating with her hands the ordinary size of a new-born babe, "and I growed the rest myself."—The Lombard News Letter.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Uniflow vs Corliss Engines

HERE is an interesting table which I compiled from a chart comparing the mean effective pressures of Uniflow engines of various initial pressures, with those of Corliss engines of various initial pressures. It shows that the Corliss engine has the advantage so far as pressure is concerned, where both types are condensing. But where both types are non-condensing the Uniflow "passes" the Corliss and shows higher pressures at 40 per cent cut-off.

The engineer in the paper mill, where both Corliss and Uniflow engines are so commonly used, will find these facts of interest and value, because it is the mean effective pressure that really determines the "size" of engine to buy for any given purpose. Every engineer knows that the horse-power of a steam engine is directly proportional to the mean effective pressure, all other factors being equal, such as length of stroke, diameter of cylinder, and speed.

The reason why there is a difference in pressures in these two types of engines lies in the fact that there is a difference in compression. Compression begins later in the Corliss than in the Uniflow. The greater the compression, of course, the greater the back pressure, and since back pressure must always be deducted from active pressure the Corliss engine benefits in most cases. This is a point worth remembering.

Mean Effective Pressure

Type	Pressure, Lbs. per sq. in. Gauge	Condensing or Non-condensing	Cut-off 10%	Cut-off 25%	Cut-off 40%
Uniflow	125	non-condensing	36	68	91
Corliss	125	non-condensing	38	69	89
Uniflow	125	condensing	45	76	98
Corliss	125	condensing	50	85	109
Uniflow	150	non-condensing	42	81	106
Corliss	150	non-condensing	53	83	104
Uniflow	150	condensing	54	92	117
Corliss	150	condensing	65	100	124

Insulation

IMPORTANT steam lines should be well insulated, for the simple reason that good insulation reduces heat loss from 60 to 80% and more.

The insulation that is most commonly recommended is the much-advertised "85% magnesia"—which is an adopted STANDARD INSULATION and is simply a mixture of 15% asbestos and 85% carbonate of magnesia. On high pressure steam pipe, 2 inches and smaller, a thickness of 2 inches should be used; between 2 inches and 8 inches use a 2½ inch in thickness; and on larger pipes use 3 inches. Thinner insulation may be employed on lower temperature lines.

To be sure there are many manufactured forms of insulation that come in rolls, sheet form, corrugated forms, in loose plaster form, and for hot underground pipes a wooden cased asbestos, waterproofed type is commonly installed.

4% Heat Saving

THE writer has a number of times been asked, "Just how much heat should a good boiler feed regulator save?"

I have seen reports by users in which it was shown that the savings range all the way from 2 to 8 per cent in fuel costs. The average is 4 per cent, and that is the figure that I would advise anyone to use who is figuring on installing first-class regulators.

Transmission Economy

IN THESE days of paper mill power plant economy, don't neglect your transmission friction. It is possible to save much coal by taking good care of the old bearings, by installing new bearings of the ball or roller type, and by keeping the belts in good pulling trim.

A good way to determine the saving due to lessened transmission friction is to take an indicator diagram on the driving engine, with all machines running idle. That is, make the machines run; but do not allow the workmen to do any work in or on them while you are taking the diagram. The diagram thus taken will be a true "friction diagram." Its area represents the energy lost in carrying power from the engine to the work. In large mills, the area of this diagram is often appalling, almost. It is so large that when the engine is running at "full load," the difference in area of diagram is scarcely noticeable. The friction may be as much as 70% of the total power consumed.

Now, if we could reduce friction to zero, and if we could make the engine run with a mechanical efficiency of 100% (both impossibilities), we should have an indicator diagram of zero area. This would be an "ideal" state of affairs. It cannot be attained, of course; but it can be approached ninety times in a hundred, and that is exactly what we should all strive to do; make your friction diagram area as small as possible.

Therefore, after taking your diagram, go over all of your bearings carefully; clean them: rebabbitt where necessary; remove all knocking, backlash, play; oil them with good oil or grease; and if the shaft is scored, true it up. If the bearing is an important one through which considerable power passes every day in the year, 10 or 24 hr. a day, it will probably pay you to change over to a ball bearing type. They are

great power savers, and as made nowadays are proving themselves to be surprisingly durable.

Go over all belts, transmission chains and rope drives. Do not permit slip of any kind, for it must be remembered that each per cent of slip means a direct loss of one per cent of coal. Keep the belts in good, pliable running order. Release excessive tensions where it is evident that such tensions are creating unnecessarily high friction in the bearings. Do not sanction hard, stiff belts.

After doing all of these things, and instructing the men to oil machines, properly, take another friction diagram. You will find a considerable reduction in area if your transmitting mediums were in bad order theretofore.

Gallons in Cylindrical Tanks

THIS chart will quickly give the number of gallons in a cylindrical tank of ordinary size, and even beyond the ordinary sizes used in paper mills.

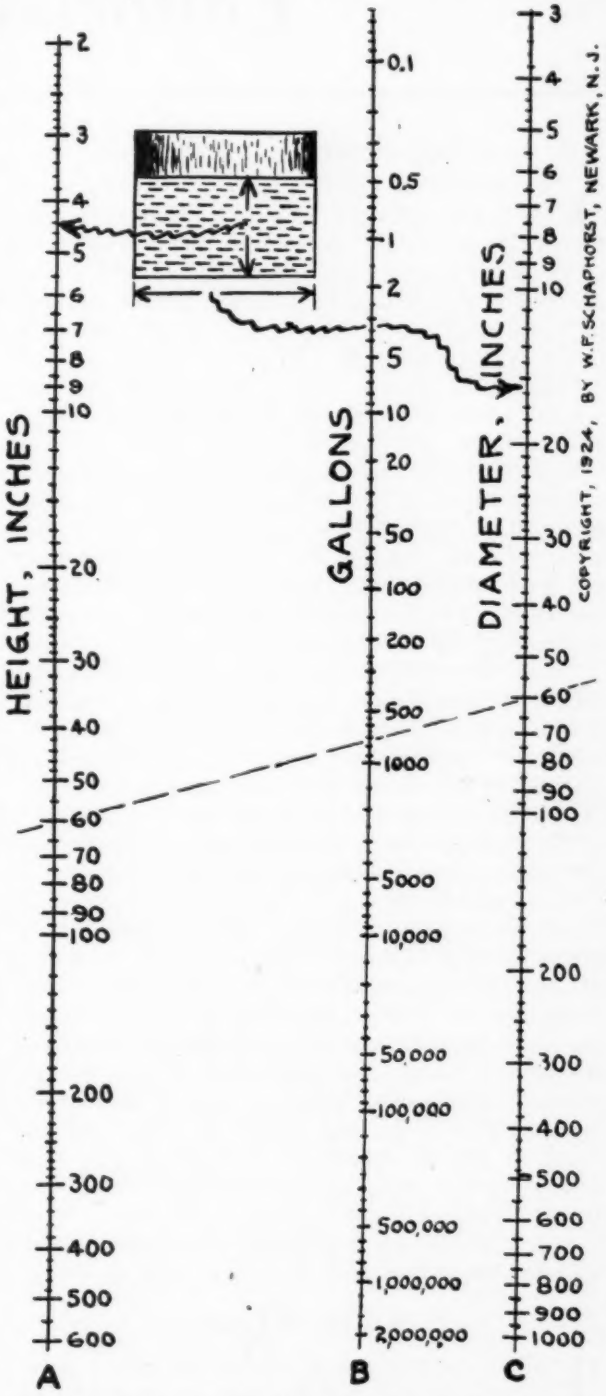
To use the chart simply run a straight line across connecting the height of the tank in inches, Column A, with its diameter in inches, Column C, and the number of gallons is instantly given in Column B.

For example, how many gallons will be held by a cylindrical tank 60 inches high by 60 inches in diameter? The dotted line drawn across the chart shows how it is done. Connect the 60, Column A, with the 60 in Column C, and the answer is shown by Column B to be very close to 740 gallons. Figure it out in longhand and you will find that the answer is 733 gallons, showing that the chart is very accurate indeed considering its wide range.

Inversely, the chart may be used to figure the size of tank that will be necessary to hold a certain number of gallons. Thus, if a tank is wanted to hold 740 gallons simply run any straight line through the 740, Column B, and the intersection with Column A gives the height, and the intersection of the same line with Column C gives the diameter. By swinging a straight line around the desired point in Column B the most economical height and diameter combination are easily obtained. As will be observed, there are hundreds and thousands of combinations possible to hold 740 gallons. Also, if we should have a tank 60 inches in diameter and, say, 200 inches high, and it should be desired to pour only 740 gallons into it, the same dotted line drawn across this chart will show that by filling the tank to a height of 60 inches it will contain 740 gallons.

The range of the chart, as will be observed, is very great. It will take care of any tank all the way from 2 inches in height to 600 inches in height, and any diameter from 3 inches to 1,000 inches. The maximum capacity of the largest tank is given as 2,000,000 gallons, or 40,000 barrels. The chart is based on the U. S. Standard of 231 cubic inches per gallon.

In case the tank is so large that one would prefer to use feet as a dimension instead of inches, this chart can still be used by multiplying the figures in Column B by 1,728. Thus, if the tank should be 60 feet high by 60 feet in diameter, the same dotted line would give the answer as 740 x 1,728 equals 1,275,000 gallons. In this way the chart can be made to take care of very extraordinary sizes, the maximum capacity of Column B then being 2,000,000 times 1,728 or 3,456,000,000 gallons.



Editorial Comment

By WILLIAM SIBLEY

Buy Your Coal Now

ACCORDING to the Committee on Public Relations of the Eastern Railroads, soft coal production of this year is far below that of 1923. They say:

"Up to the 26th of July, or in the first thirty weeks of this year, only 254,420,000 tons of bituminous coal had been produced, compared with 311,971,000 tons in the same period a year ago."

Coal car loadings for the week of July 26th totaled 146,057 which total was 48,759 cars under the same week in 1923.

The "Railway Age" believes the extremely slow coal movement and the depleted conditions of domestic and industrial coal reserves, coupled with public apathy toward the necessity for buying coal **now**, will work havoc to both coal and transportation companies when once cold weather has set in. An article in a recent issue of that publication says:

"The railways at present have about 170,000 coal cars in good condition rusting their wheels on side tracks because they are given no coal to haul, and industrial concerns and domestic consumers, with astounding lack of foresight, are persistently refusing to buy coal in normal quantities.

"The railways have demonstrated repeatedly that they can easily handle all the coal that is required if they are given a chance to handle it in a volume that is anywhere near uniform. They cannot haul it economically or satisfactorily when shipments fluctuate 50 to 75 per cent between different seasons. The huge increase in shipments clog the transportation machine, and when the machine becomes clogged the demands for coal soon exceed the supply, and abnormal prices result. Business concerns and domestic consumers in the long run pay for these vast fluctuations in coal shipments in unnecessarily high transportation costs and unnecessarily high coal prices."

If you haven't yet purchased your winter's supply of coal—buy it now.

A Few Figures

THERE is one motor vehicle for every seven persons in the United States. Registrations totaled 15,523,898 on July 1, 1924. This is an increase of 19 per cent over July 1, 1923.

In the face of automobile and truck increases, it is interesting to know that the motorcycle registration has steadily decreased since 1919. On January 1, 1920, 240,090 motorcycles were registered in the United States. Today the registration stands at 126,386—a decline of almost fifty per cent in less than five years.

In 1895 motor vehicle registration totaled about 300. In twenty years, or 1915, our usage of motor vehicles had increased to about 2,500,000. It has been only during the past ten years that we have added the extra thirteen millions.

As far back as 1918 and 1920 we heard people say, "We have reached the saturation point in automobiles. We cannot accommodate any more." Knowing this, we hesitate to follow suit with such a statement. Indeed, we would not, for we believe that we will shortly be utilizing twenty millions of motors annually. However, motor manufacturers have now reached the point where they consider future population the most important factor in determining the future consumption of automobiles.

Source of Information on Economic Problems

ACCORDING to Lieut. Duncan, a man who has devoted years of thought and study to the subject, more than 4,300,000 copies of publications carrying union propaganda are distributed monthly. This is all the more interesting, since it is a known fact that employers' organizations publish and circulate, principally among employers, only about 100,000 copies per month of periodicals devoted to the many problems of industrial relationships.

Another interesting phase of this situation is found in the fact that the radical groups, those conducting a never-ending fight against law and orderly government, publish and distribute each month, more than two million copies of radical publications.

It is estimated that union labor organizations expend approximately six millions of dollars annually in their propaganda campaigns. The various radical groups, it is believed, spend about $250,000 per month, or an annual amount of $3,000,000, in the direction of undermining the public's belief in the Constitution and in American principles.

Isn't it obvious that greater effort must be made to counteract the effect of pernicious propaganda activities now being carried on?

A Lesson in Economics

IF you own an expensive watch and take it to a skilled watchmaker to be repaired, whose watch is it after he has fixed it? Does it still belong to you or does it now belong to the man who worked on it, by virtue of his labor?

To whom does the control of the watch belong?

—— on Timely Subjects

Does the man who worked upon it, by that labor, gain the right to decide whether he will hand it back when you have paid the bill, or can he sell it and divide the proceeds with you?

The laborer has every right to a fair, even generous return for his labor. He has every right to reasonable hours and good working conditions. If methods of sanitation or operation are improved, if equipment is devised that will lift the burden of drudgery from his shoulders, he has every right to be accorded the benefits of those improvements. He has the right to offer his services for sale as well as to withhold such services. But certainly his labor gives him no right to control an industry since it gives him no title to ownership.

There is a well directed movement on foot to throw the ownership or control of the railroads into the hands of the government. Since all of us are the "workers", regardless of our particular capacity, the workers of the United States form the Government. Hence the movement would give control, if not direct ownership, of the railroads to the workers. If the answer to the second paragraph is "No"—how can the worker, by virtue of his labor, expect the title of ownership to the various transportation systems?

We need again a primary lesson in economics.

Something to Think About

THERE are approximately 300,000 large and small manufacturing establishments in the United States. Reports from the Federal Government show that less than half of these companies ever make one cent of profit and that less than ten per cent of them know what their actual costs of production are.

Only recently the National Industrial Conference Board predicted in its report that there will be a shortage of between 200,000 and 300,000 trained industrial executives by the year 1930. This report further states that there will be less than 50,000 men who will have been trained by that time to take over the management of industrial properties.

There are four distinct phases to manufacturing or producing activity. They have to do with the control and co-ordination of men, methods, materials and equipment. Knowing the four elements that enter into manufacturing, what is being done in your organization to thoroughly ground executives in the fundamental principles of control and co-ordination? Obviously, if these reports are accurate (and such reports have the habit of commanding respect) something must be done—promptly.

Concomitant with gigantic corporations, according to industrial relations experts, is the lack of personal contact between managers and working personnel, employers and employees. This lack, they say, is the principal reason for all social evils and industrial discontent. Yet the fact remains that large corporations are universally more successful than their smaller brothers and the employees of large corporations enjoy, in most cases, more benefits than do the employees of the small shop.

To be an asset to an industrial enterprise, the general manager should be well grounded in economics, finance, advertising, management systems and methods, sales management and methods, cost-accounting practice and production. He should have, also, a working acquaintance with the technology entering into his product; material handling, warehousing, and the analysis of raw materials. He should be schooled in industrial development from the historical side, thoroughly informed regarding manufacturing site selection and keep abreast of current developments and improvements made by his competitors.

We know several large organizations, and many small ones, that would be seriously handicapped by the prolonged absence of the president or general manager. That is not a healthy condition. Such a circumstance does not make for the assured or continued prosperity of the individual concerns. If your organization is in that condition, it is high time to begin the training of your future management.

1923 Wages in Thirteen Cities

THE following is a tabulation of wages paid to various crafts, using London as a basis for calculation. Note America's standing in comparison with all other industrial cities.

Credit must be given to the British Ministry of Labor Gazette for this table.

INDEX NUMBERS OF COMPARATIVE REAL WAGES, 1923
(LONDON, 100)

Occupation—	London	Amsterdam	Berlin	Brussels	Christiania	Madrid	New York	Ottawa	Paris	Prague	Stockholm	Vienna	Warsaw
Mason	100	107	61	70	86	50	274	217	71	63	95	57	79
Bricklayer	100	107	61	70	86	50	274	217	71	63	95	57	79
Carpenter	100	107	61	76	82	56	247	179	71	63	95	60	..
Plumber	100	116	54	64	80	52	242	200	70	..	86	..	..
Painter (general)	100	122	57	65	91	55	260	175	75	68	112	65	83
Unskilled laborer	100	118	77	67	108	50	...	161	88	67	112	61	84
Machinist	100	108	57	73	104	83	162	196	58	54	79	62	61
Ironmolder (hand)	100	96	58	78	106	78	215	197	59	61	81	..	62
Patternm'ker.	100	101	53	95	97	78	197	210	54	..	74	..	57

The Thirteenth Annual Conference of Hammermill Agents

PAPER merchants whose business it is to supply the printing trade met in Erie, Pa., August 27, 28 and 29, to attend the thirteenth annual conference of Hammermill agents. The conference was unofficially opened on the 26th with a meeting of the agents' advisory committee at the home of Ernst R. Behrend, president of the Hammermill Paper Company.

On Wednesday morning the agents began to arrive from every section of the United States. After being registered at the Hotel Lawrence they were taken to the Kahkwa Club, located about ten miles from the city, where all of the meetings were held. Immediately after luncheon the first business session began.

E. R. Behrend, in the role of chairman, opened the meeting with an address of welcome. He then asked the agents to rise and pay a moment of silent tribute to the memory of George W. Hoffman, Holland Paper Co., Buffalo, N. Y.; D. Clinton Smith, Cater, Rice & Carpenter Paper Co., Denver, Colo.; C. S. Van Reed, Van Reed Paper Co., Reading Pa., and Louis A. Buckley, U. S. Envelope Co., Worcester, Mass, who died since the meeting of last year. Regret was expressed that Otto F. Behrend, treasurer of Hammermill, was ill and could not attend the meeting.

Some innovations taking place at this year's conference were then announced by Mr. Behrend. Instead of continuous business sessions, with the last day devoted entirely to athletic sports and recreation, the business meetings were broken up with outside activities taking place on Thursday and Friday afternoons. Miss Anna Grubb, representing the Irwin Paper Co., of Quincy, Ill., was introduced as the first woman to ever represent a paper merchandising house at a Hammermill conference. A number of Hammermill women employed in sales and secretarial capacities were also present for the first time at one of these meetings.

J. C. Howell, vice-president of the Brookmire Economic Service, was introduced as the first speaker to ever appear who was not directly connected with the paper industry, and was consequently able to give an unbiased opinion regarding business conditions as they really exist.

Mr. Howell spoke on "The Business Outlook," He said: "Business institutions are institutions of public service. Unless every business enjoys almot perfect co-operation it is usually sure of certain failure in these days of severe competition, or at least it will not enjoy the success it might have had. Because of the interdependence of industries it has become necessary for every man to know something about the other fellow's business.

"Only in this way can facts be obtained and facts are essential to success in anything. By assembling the facts and studying the underlying trend in the major industries we have learned that we have a sound basis for believing the outlook of business is bright, with a conservative expansion and not inflation in sight. The expansion is bound to be conservative because we now have a surplus capacity for expansion. There must be an inevitable slowing up in building on account of the large building program of the last two years. A temporary overproduction now exists in the automotive industry.

"While these factors will act as a check to prevent a too rapid expansion that might verge on inflation, business must pick up because there is a high standard of living in the United States to be maintained. Sanity in government regarding the needs of business is being developed. An unusually sound and solvent condition is now being enjoyed by the railroads. There is a better and much improved agricultural outlook.

"All of these things considered together with a generally satisfactory employment of labor, an European situation that will encourage foreign trade, and a surplus capital on hand working to bring about industrial development, point to a better condition. Low inventories and even a shortage of some stocks on hand mean an active buying to satisfy the normal consumption. This is especially true in such major

Group picture taken of the Thirteenth Annual Conference of Hammermill Agents, August 27, 28 and 29, 1924

industries as iron, steel and cotton which are considered to be good business barometers. In addition to all of these encouraging factors which point to better business, the bank deposits throughout the country show a generally good purchasing power, well distributed."

Norman W. Wilson, vice-president of Hammermill, outlined the business program and emphasized the important points to be discussed in the conference.

Hammermill Shows Steady Advance.

William S. Epply, director of sales, showed the steady advance that has been made by the Hammermill lines during the past years by means of a series of colored charts. He stressed the advantages of handling a quality product that is nationally known and readily obtainable in any quantity desired.

C. W. Chabot, advertising manager at Hammermill, whose skilful guidance keeps the Hammermill lines constantly in the public mind and who has made Hammermill Bond known throughout the world, outlined next year's adevrtising. He assured the paper merchants that an even more concentrated effort is going to be applied behind the line to acquaint the 12,000,000 prospective paper users with the merits of Hammermill products. Illustrations of magazine advertising were shown that were notable for their simplicity and directness of appeal. Coupled with this will be direct mail advertising that possesses the same characteristic. An unusual feature of the latter is the practical use to which it can be put instead of being read and forgotten.

E. V. Johnson, of the P. P. Kellogg division of the United States Envelope Co., addressed the agents on the growing use of the Hammermill converted lines.

The paper merchants, as many of the employees of the Hammermill Paper Co. as could reasonably attend and their guests were entertained at the annual banquet at the Kahkwa Club in the evening. Ernst R. Behrend, in the role of toastmaster, announced that no speeches had been prepared but a few impromptu talks would be welcomed. He then called on the Hon. Joseph C. Williams, mayor of Erie, who welcomed the guests and assured them that everything possible would be done to make their stay both pleasant and profitable. J. C. Howell, vice-president of the Brookmire Economic Service, spoke on the importance of being loyal to ideals. Dr. Hugh P. Baker, secretary-treasurer of the American Pulp and Paper Association, spoke on the importance of association work.

Thursday morning was given over entirely to the agents' private meeting. On Friday morning a general business session was resumed in which the agents and the officials of the Hammermill Paper Co. discussed the problems that had been suggested in the previous meetings.

At this year's meeting R. P. Andrews, of the R. P. Andrews Paper Co., Washington, D. C., was re-elected to the advisory committee. G. A. McKinney, F. A. Flinn, Inc., New York City, and J. B. Jones, Western Newspaper Union, Omaha, Neb., were elected as new members.

W. B. Stevenson, Storrs-Bement Co., Boston, Mass., and J. A. Carpenter, Kansas City Paper House, Kansas City, Mo., were elected to the advertising committee.

Golf, tennis, quoits and bowling-on-the-green occupied the attention of the paper merchants on Thursday and Friday afternoons. The prize winners on Thursday were:

Golf—Albert Miller, low gross 91, wrist watch; Robert Lasher, second low gross, 93, billfold; kickers' handicap, E. J. Petrequin, R. J. Bull and B. A. Judd were tied; Bull won the prize on a draw.

Tennis—Sidney Jones, cigarette case; Ernest Mead, runner up in tennis, knife.

Bowling-on-the-green—E. T. Mudge II., billfold.

Quoits—W. R. Grzelle, knife.

Putting Contest—Bert E. Reeves, I. W. Carpenter Jr. and Arthur B. Sherrill were tied with 25. Reeves won the prize on a draw.

On Friday afternoon the following won prizes:

Frank Howe, low gross 90, cigarette case; A. H. Seyler, low net 70, wrist watch; B. A. Judd, second low net 71, suit case; G. L. Webb, putting contest, 25, traveling clock. George Houser won the bowling-on-the-green. Quoits—W. N. Schaefer, cigarette case.

The Joint Committee on Approved Chemists for the American Paper and Pulp Association has recently approved for listing Mr. Olin W. Callighan, Allied Paper Mills, Kalamazoo, Mich.; Mr. G. P. Genberg, Fraser Companies, Ltd., Edmundston, N. B.; Elbert G. Milham, chief chemist of the Bryant Paper Co., at Kalamazoo, Mich., and Edgar Desgagne Dit Durant, assistant chemist of the Bay Sulphite Co., Ltd., 45 Port Alfred, Co. Chicoutimi, P. Q., Canada.

Our idea of a "good mixer" is a beater engineer.

Speed Reducers in the K. V. P. Co.

In our August number was printed an article on Speed Reducer Performance in the Kalamazoo Vegetable Parchment

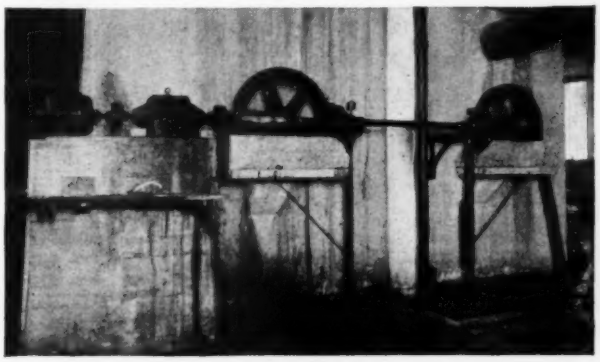


Figure 1

Company of Kalamazoo, Mich. In order to illustrate the application of these speed reducers we have obtained three photographs of their installation.

Figure I is a picture of one of the speed reducers driving

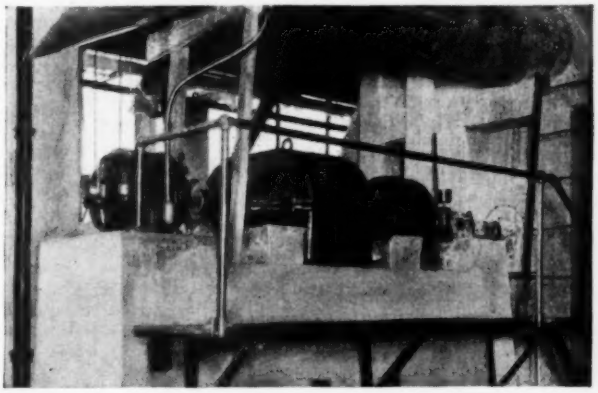


Figure 2

agitators in one of their large stock tanks. Figure 2 shows driving mechanism in a large broke tank with single unit, reduction ratio 77 to 1, and Figure 3 shows a small 19.6 to 1 reduction unit driving stock tank agitators.

The Kalamazoo Vegetable Parchment Company has seven

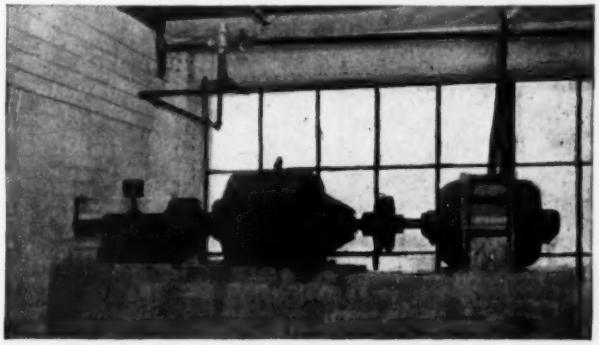


Figure 3

mill type speed reducer units, all of which are operating and giving good results. The units have stood up well under the continuous operation schedule they are performing and have proven their adaptability over that of open gearing, pulley or belt systems.

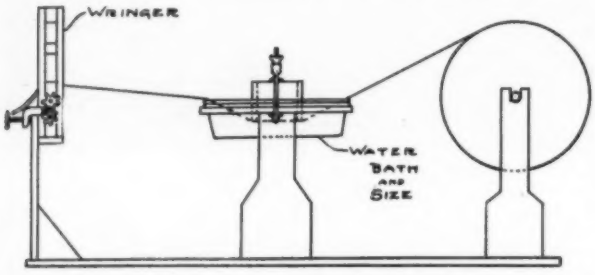
The American Lakes Paper Company of Waukegan, Illinois, have completed the installation of their oil-burning power plant consisting of two boilers and underground oil storage tanks.

Practical Helps for the Mill Man

Tub Sizing Apparatus for Laboratory Experimental Work

IN carrying out experimental work on tub sizing meterials, strength tests, etc., the illustration shows a convenient apparatus that may be used to advantage instead of dipping the sheets by hand.

The paper is turned through an ordinary hand wringer, unwound from a roll and carried through the size, which is contained in a 10"x13" enamled pan set in a 10"x16" pan, serving as a water bath. This is kept at a constant temperature of 120 degrees F. by a gas burner.



After the paper is sized it is hung on a loft dryer, made by placing bronze wires 2 inches apart on a board. A dryer 7 feet long will handle 60 yards of paper.

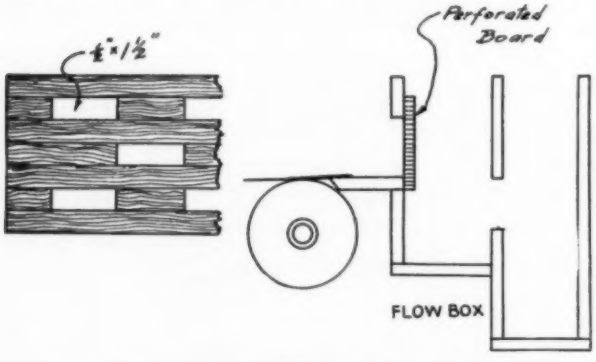
A 24-pound unsized bond paper was found to be the most satisfactory for making tests.

Sampling Dry Pulp for Moisture Tests

WHEN a large number of samples of dry pulp are to be taken for moisture tests much time and work can be saved by using an electric drill with the ordinary disc cutter instead of the hand brace.

Perforated Slice for Light-weight Papers

ONE of our friends has found that a perforated board used in the manner shown has been of great benefit on a machine with a short wire and formation space making light weight papers.



The board is ten inches wide extending across the machine.

New Rope Carrier for Threading Tail Through Press Rolls

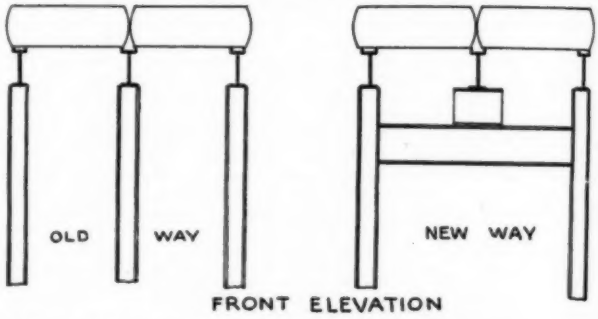
A MICHIGAN paper company has installed a new Sheahan rope carrier, which automatically carries the paper into and through the second and third press rolls onto the dryers. This apparatus will carry the paper automatically through these presses regardless of what speed the paper machine runs, and when the machine is equipped with this carrier on the dryers, it automatically carries the paper into the dryer carriers. It carries the paper equally as well through presses that are reversed as it does through presses that run straight, and it is now possible for those machines that run straight with their third and fourth presses, to reverse these presses, thereby getting a great deal better finish on their paper and also to save a great deal of steam in the drying of the paper. It is a well known fact that unless the paper is turned over before passing through the final press, that it will come out of the press a great deal wetter than it does with the press, where the paper is reversed before entering. This apparatus is simple, inexpensive and can be installed on the paper machine without loss of time. It has been in operation in this mill for several months and there is no doubt as to its satisfactory operation.

Screening Sawdust from Chips

A NOVEL method of screening out sawdust from chips which has given very satisfactory results is described to us as follows: The chips are first passed through an ordinary rotary screen of the Carthage type which takes out the oversized chips leaving the standard chips and sawdust. The chips are passed through another screen of the same type, but with ⅛-inch mesh wire covering both the inner and outer cylinders. The large volume of chips going through the inner cylinder seems to force out the thin slivers as well as sawdust, but the outer screen retains the slivers, which are the length of standard chips and give a good fibre. By this method the percent of sawdust by weight was reduced from 2.75% to 1.75%.

Preventing Columns Burning Out

IN ONE instance where Stirling boilers were set in batteries the center column would frequently burn out in the middle. With the additional weight thrown on them the walls and arches would soon fall in, making expensive shutdowns.



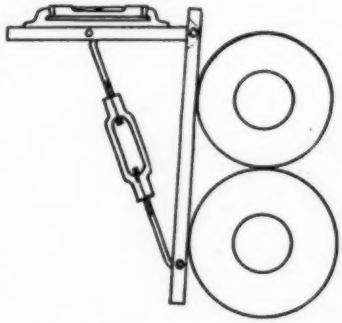
This trouble was eliminated by placing a 24 inch I-beam as shown above the point where the heat is most intense.

Life of Felts Increased by Using Slotted Suction Boxes

BY USING suction boxes with half inch slots extending the length of the box in place of the perforated cover for the felt suction boxes, it has been found that the life of the felt could be increased but that there was a greater tendency to form felt marks.

Device for Lining Calender Rolls

A VERY convenient device for lining-up calender rolls may be made by joining two steel bars so that they can be set at the desired angle by the screw adjustment, as shown. An ordinary engine level is attached to the horizontal bar.

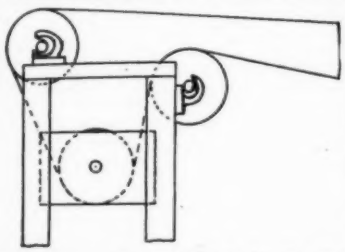


When the rolls are to be lined up, the frame is set against one end and the horizontal bar leveled by the screw. The other end is then checked. A thousandth of an inch variation in line will shift the bubble an eighth of an inch.

Automatic Take-up for Dryer Felts

THE sketch shows a comparatively simple automatic take-up for dryer felts that can be made quite easily. The device consists of three rolls carried on a frame attached to the upper part of the machine frame. Two of the rolls are sta-

tionary, while the third is carried by the felt and bearings, which slide up or down according to the tension in the felt.

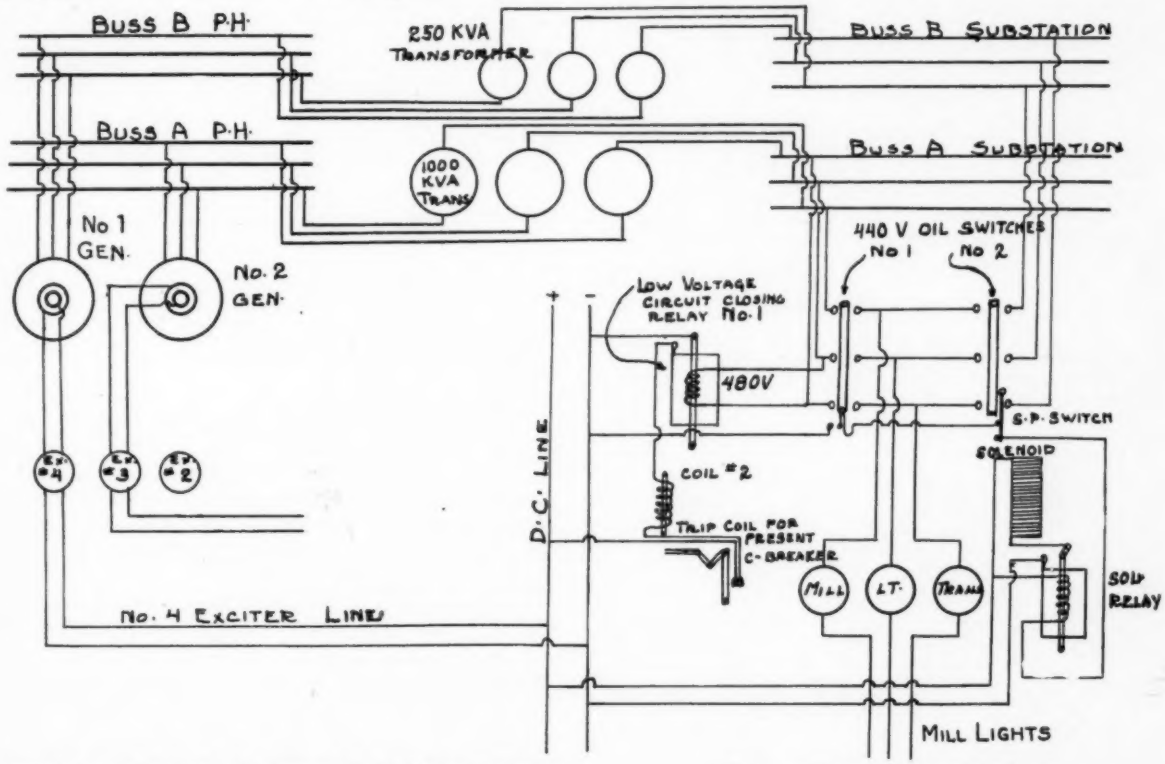


The weight of the roll keeps the felt under constant tension, and by doing so has increased the life of felts and eliminated much trouble in starting up and shutting down when the felt quickly shrinks or slackens.

A 36-inch take-up was allowed for the sliding roll, which with a 6-foot stretch screw takes care of all stretch in the felt. A roll weighing 450 pounds was used for the take-up on a 110-inch machine.

Automatic Transfer from One Buss to Another

When the mill lights are on one system and the machines on another, it sometimes happens that the light system will kick out during storms, or high line trouble and considerable trouble develops in the mill before it is possible to transfer the lights to the other buss. In the diagram is shown an automatic transfer that will change the lights to the other system automatically as soon as the switch kicks out, and so quickly that the change is hardly perceptible.



During ordinary operation when the lights are on buss (A) the current in the buss holds the contact open at No. 1 relay. As soon as the system kicks out, however, this contact closes allowing direct current from the exciting line to go through the No. 2 coil, which in turn kicks out the 440 V oil switch No. 1. As a result of this the oil switch No. 2 is closed by the third relay and solenoid, throwing the lights on to buss (B), all taking place so quickly that a person not expecting the change would not notice it.

In many cases the paper mill laboratory is located where there is considerable vibration making accurate weighing for analytical work very difficult. Much of this can be eliminated by setting the balance on large rubber stoppers which serve as shock absorbers.

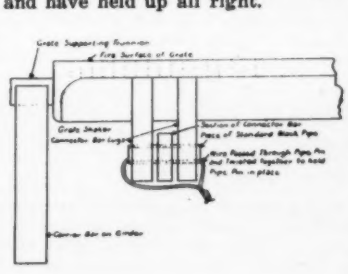
Efficient Log Haul Up and Deck

IN THE illustration is shown a deck arrangement requiring only two men to handle the wood and cut off saw instead of three or four as is customary. The sprocket of the haul up chain is placed half way across the deck and the wood coming up is sheared off onto the deck, where it is caught by two hooks and held in place ready for the saw carriage. When the

hooks are lifted by a man at the saw the wood is rolled onto the carriage by the deck chains enabling two men to handle the saw and wood.

How to Repair Enamel Ware

IF THE ware has holes in it they can be fixed by covering with litharge and glycerine, which has been mixed to desired consistency. A good way to mix is by means of a spatula and glass plate. Cups repaired as above have been used for boiling solutions of acids, alkalis, starches, gums, etc., and have held up all right.



Pipe Pin Used for Grate Connector Bars

AT times when it was necessary to take out a connector bar on a Schaefer grate the nut was usually burned on to the pin so it had to be cut off. The work was made much easier and quicker by

making a pin of a piece of pipe held in place by a wire as shown. By simply cutting the wire the pin can be removed.

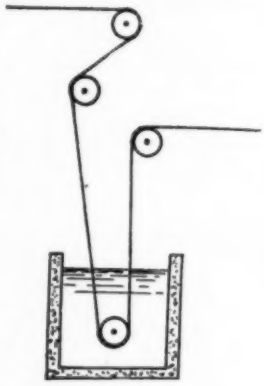
Counterbalanced Spreader Bar

THE spreader bar shown is made from two inch plank with part of a two inch pipe forming the rounding edge on the bottom. The arms holding the bar are attached to the

machine frame and are counterbalanced, so that as the sheet tightens slightly the bar is easily lifted. When not in use it can be hung up out of the way.

Washer for Yankee Machine Felts

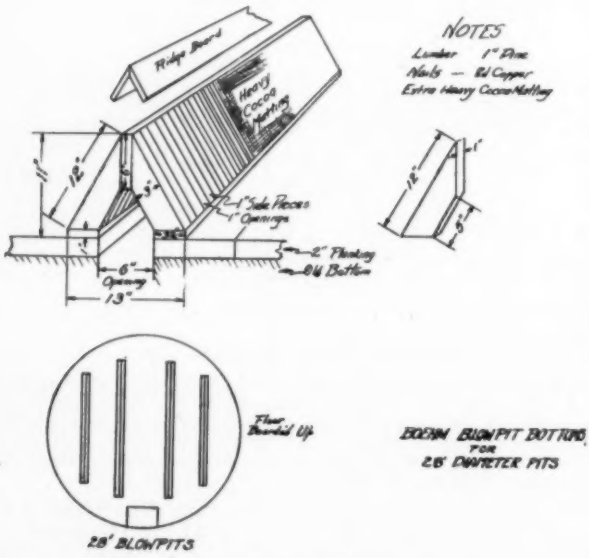
THREE or four days have been added to the life of felts on a Yankee machine in one instance by passing the felt through water in a cohcrete tank in place of using a double shower. Where formerly the felts lasted only about a week this has made an important saving.



Water condensing in the ventilators above the paper machine hoods was taken care of in one instance by putting a trough on the inside of the hood with an outlet leading outside.

New Blowpit Bottom

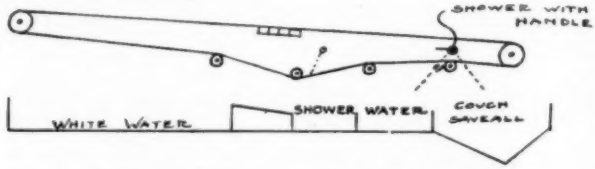
A NEW type of blowpit drainer bottom recently installed in a Wisconsin sulphite mill consists of V shaped ridges covered with heavy cocoa matting. It is claimed that this will eliminate liming of the blowpit bottoms and gives efficient



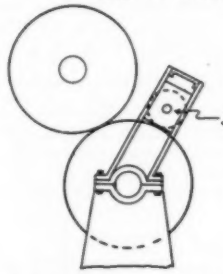
draining of the pit in washing with little loss of stock. The old bottom of the pit is covered with 2 inch plank and the cocoa matting ridges installed.

Shower Pipe with Handle

A HANDLE attached to the shower pipe behind the couch roll by means of which the shower may be turned into the couch saveall, washing the stock off from the wire into the couch saveall when starting up or into the shower water when running along ordinarily, has proved to be a very convenient arrangement. This prevents any unnecessary dilution of the white water and stock preventing loss of fibre in the overflow.



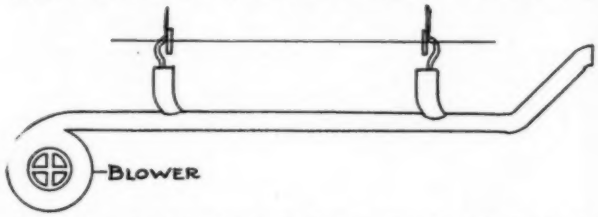
Roll to Prevent Pinching of Fingers



TO PREVENT workmen getting their fingers caught in the draw rolls on the cutter, a three-inch roll of brass tubing placed as shown is answering very well. When a man runs his fingers under the small roll it lifts up without doing any harm and allows the man to pull away his hand. The roll is held in place by wood bearings held in place by a frame attached to the machine as shown.

Handling Trimmings

A VERY convenient method of handling trimmings from the slitters used by many mills consists in blowing them



through a pipe into the broke box or directly into the broke beater. In this way the floor is kept clean with very little trouble.

The Electric Hoist—A Modern Labor-Saving Device

From the dawn of history, down thru the ages, ever since man emerged from the mists of antiquity, he has been a burden bearer, the greater part of his energy having been expended in lifting and carrying burdens.

As time advanced, when he had tamed the ox and the horse, his burden was somewhat reduced, but nevertheless, a great portion of his strength was so employed until the advent of power-operated material-handling machinery.

Frequently we read something from the pen of that class of writers who are careless in their statements and are fond of elaborating upon the great knowledge of the ancients, reiterating the statement that modern engineers not only do not know how the great blocks of the pyramids were transported and placed in position, but that there is no known contrivance of today by means of which they might be lifted.

Such a statement is at least misleading, for, while the exact methods used may not be known, the modern engineer has contrived means by which weights, many times heavier than the blocks in the pyramids may be lifted and transported.

Recently the newspapers contained an account of the moving of an entire masonry building, containing many human occupants; the building being lifted and moved without disturbing the life within, even water, gas, and electric connections being maintained so that the normal conditions under which it was occupied were continued.

Altho from prehistoric times man has been a burden bearer, aided after a time to some extent by the ox and the horse, he has never had so much relief extended to him in so few years as since the commercial development of the electric motor and its application to power operated machinery.

50 Years of Rapid Progress

The remarkable rapidity of the early growth of the electric motor may be seen from the fact that in 1876, at the Centennial Exposition in Philadelphia, the entire electrical ex-

hibit was contained in a space about fifty feet square, while in 1893, only seventeen years later, practically all of the great Columbian Exposition at Chicago was run by electric motors, including moving sidewalks and an elevated railroad that encircled the grounds within the enclosing walls.

Early recognizing the desirability of a power-operated device that would lift and carry, engineers seized the electric motor, upon its advent, and developed what has come to be known as the electric hoist.

The first hoists built were of the hand operated type. The development of the electric hoist has consisted principally in applying a motor in place of the hand operated chain.

Such machines are used in almost innumerable ways to lighten the burden of labor in every industry where material must be lifted and conveyed; handling commodities in cold storage plants, lifting ice cans in artificial ice plants, coal and ashes in boiler plants, serving machine tools in shops where the material is too heavy to be handled manually, lifting rolls of paper onto the presses in printing establishments, loading and unloading cars, and in fact are put to a multitude of uses where the shoulders of labor have in the past carried a wearying burden.

The electric hoist is usually built to hang from an I-beam runway, sometimes from a jib or bridge, and may be movable along its runway by means of a trolley of the plain push hand geared, or motor driven type.

The plain or push type is, as its name implies, operable along the runway by pushing on the load that hangs from the hook.

The hand geared type of trolley is operable by means of a hand chain that hangs low enough to be reached by the operator, a pull on which moves the trolley and hoist along the runway in either direction desired.

The motor driven type is a modification of the hand geared type, made by attaching an electric motor in place of the hand chain wheel, and operable by means of pendent controller cords which may be reached from the floor.

In what way does the electric hoist lift from the shoulders of man the burden that has rested upon them since before the dawn of history?

In the few years during which it has become an accomplished fact, it has come to be used in a variety of ways in many industries, not only to ease the worker of his load, but to increase his production, and thereby help measurably to keep down the cost to us all of articles that we must buy that are necesary for our very existence.

For instance the electric hoists are used to handle ashes and coal in boiler plants, thereby not only doing away with the back breaking, sweaty toil of men with wheel barrows in the hot stifling air of the furnace room, but allows one man to move more coal and ashes with less labor and discomfort than under the old system, and so reduces the cost of power and finally the cost of the product of the factory that the power plant serves, incidentally helping to keep the cost of that product down for the man who is doing the work, as well as for the rest of us, be it bread, ice, meats, clothing, or what not.

Again the hoist may be used to handle directly the product of a factory, as in the handling of paper stock, rolls, etc., in pulp and paper mills, and unloading rolls from truck and placing them in storage.

They are used in warehouses for lifting barrels, boxes, bags and bales, not only from floor to floor, but also in stacking and recovering.

Reduced Living Costs

The electric hoist is playing no small part in the reduction of the cost of living, for wherever, by means of an improved device, one operator may turn out more of a given product, that product of necessity is cheaper to produce and so costs less to the ultimate consumer.

We may take as an example a warehouse, which is efficient only in proportion to the amount of material that may be stored there at any one time.

It is perfectly obvious that if the material, which may be in sacks, barrels or cases, can only be stored as high as it can be lifted by hand, the charges for storage will be much higher than if it could be piled twice as high, or as high as the roof would permit.

As such charges are added to the cost of the material, and so passed on to the ultimate consumer, the cost to the latter may be reduced by any means which will tend to lower the storage charges.

Such a result is obtained in many places by the use of electric hoists, by means of which the material may be piled almost to the ceiling or roof girders.

We might go on indefinitely reciting cases, where a small electric hoist saves three to five times its initial cost in one year; unloading cars in three hours that formerly took two days; increasing production 10 per cent, releasing three to eight men for other work; enabling one man to do the work of four; systematizing lifting and rehandling.

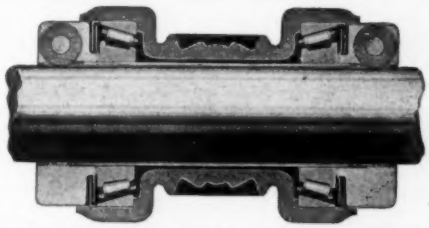
Many of those processes have not only tended to cheapen the product, but have become more agreeable to the worker because of the use of the electric hoist.

Many are the uses to which the electric hoist has and may be put, but there are still many who might profit by their use who look upon the electric hoist as a device for lifting the heaviest loads only, whereas it is really a means by which much time and labor may be saved, if properly applied after a careful study of the problem, often resulting in a large dollars and cents saving where several men are now handling material in an inefficient way.

New Roller Hanger Bearing

The Dodge Manufacturing Corporation, Mishawaka, Indiana, has placed on the market a new lineshaft bearing embodying the Timken Tapered Roller Bearing, as well as several new features of construction. This product is the result of many years development and investigation.

This is a simple bearing. There are only five parts to the complete assembly. It consists of two Timken tapered roller bearings mounted on a ground and slotted steel tube and fitted to an accurately machined housing. The ends of the



steel tube are threaded to receive clamping collars designed to secure accurate adjustment of the bearings on the tube. This adjustment is made at the factory and need not be altered by the user.

The mounting of the tapered roller bearings, as described, insures full utilization of the bearings for both radial and thrust loads. It also adds to the ruggedness of the assembly and is of particular value in resisting the side weave of heavy driving belts.

The method of fastening the steel tube or sleeve to the shaft permits its use on any commercial shafting. This fastening is accomplished by simply setting up the screws in each of the two clamping collars.

The dust proof feature is also of great importance. The sleeve on which the bearings are mounted extends from end to end of the housing. Liberal grease compartments are provided inside of the housing and outside of the tube. The outer ends are protected against dust by special metallic grease seals which eliminate friction at this point and positively prevent dust working in or the lubricant from working out. These grease seals take the place of felt washers or packing.

The Timken tapered roller bearing is constructed on the cone principle which insures a true rolling action. The bearing itself comprises four parts, a cone or inner race with outside taper, the tapered rollers, a cage or roll retainer and a cup or outer race with inside taper.

The erection of this new lineshaft bearing is very simple. It is only necessary to slip the bearing over the shaft and set up the clamping screw in each of the split clamping collars. To remove it is necessary to loosen the screws in the collars and slip the bearing off the shaft.

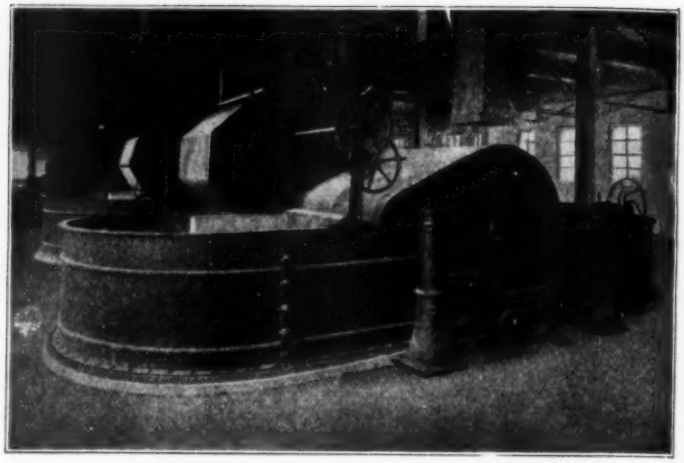
A New 10-Ton Crawling Tractor Crane

The Industrial Works, Bay City, Mich., who recently designed and built several 200-ton locomotive cranes which were the largest in the world, now offer a new type at the other end of the scale. This is a 10-ton crawling tractor crane embodying many new engineering features and known as type "D."

One important feature is the independent control of the traveling, slewing and hoisting motions. These motions may be utilized in a variety of combinations which are said to result in a greatly increased speed and efficiency of operation.

The entire upper works rests on a rotating steel base, which insures rigidity and perfect alignment. This base rotates on four conical steel rollers which are easily accessible and which may be taken out without removing any of the parts or jacking up the crane. All gears in the upper works are of cut steel. All oil pipes lead to the operator's platform and the

"Fine Feathers Make Fine Birds"



Valley Beaters Make Fine Papers

Valley Holland Beaters Have

1—A combination Lighter Bar and Stand which gives rigidity, endurance and strength. The Lighter *rests on its own sole-plate,* holding the beater always rigid, thus prolonging its life and insuring greater efficiency.

2—An especially heavy spindle and large journal boxes are features of Valley Holland Beaters.

3—A combination cast iron back fall, knife holder and front fall. It is an exclusive feature.

4—The famous bandless roll, a part of all our beaters.

Write for further information.

Valley Holland Beaters have for years produced papers which are recognized as standards of quality. Valley Holland Beaters help the manufacturer to overcome keen competition by making papers of uniform quality, color, strength and formation to meet the present day demands of the printer and consumer.

As good products are not made with poor machinery, the fact that Valley Holland Beaters produce papers which are excellent representatives in their different lines, proves that Valley Holland Beaters are fine engines.

Like the papers they make, Valley Beaters stand the test because of the low rate of wear and tear due to their strength and rigidity. The Valley Holland Beater contains many exclusive mechanical features developed in our long experience in beater design and building.

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lubrication is accomplished by a pressure system. Clutches controlling the various motions are of a new friction type which are said to engage smoothly and without shock.

Tractor shoes are close fitting, smooth surface steel and they operate over adjustable idle sprocket bearings which take up the slack in the tractor belt.

The crane has two traveling speeds and reversal of direction is accomplished by reversing the engine. Steering while propelling is accurately accomplished from the operator's platform through friction clutches and brakes controlling each tractor belt. Either belt may drive, coast or be held by brake in any degree to negotiate as sharp or wide a turn as desired. Other features are the automatic double hoisting drums which provide automatic control of the bucket during operation. Both drums provide enough rope pull as required for dragline and hoisting purposes. The feature of hoisting the bucket open on auxiliary drum greatly increases the output of the crane and makes operation much simpler.

The new Industrial is built for either steam, electric or gasoline power.

The crane is extremely versatile, operating with clamshell or dragline bucket, electro-magnet, hook and block or grapple. It is readily convertible into a shovel or a pile driver.

An Improved Portable Bucket Type Loader

To meet developments in various industries and the constantly changing conditions, the Radial loader was brought out by the Jeffrey Mfg. Co. in 1920, for both digging and loading.

The buckets of the elevator of the Radial loader are wider than the elastic boom, and this feature, combined with the three-wheel chassis enables it to dig eight or ten feet into a pile of material, or the pick-up end of the elevator may be operated through an arc of a circle. This type of machine, embodying all the latest improvements, is still highly favored for many purposes where it can be used on a fairly solid foundation. Each function of the Radial machine is absolutely independent of all others and it is easily controlled by one man from a position at one side of the machine.

There are two sizes, with a capacity of from one to two cubic yards per minute. Two speeds, a fast one forward and backward, for traveling from pile to pile, and a slow speed for feeding into the material, are provided for. The travel of the machine, and the operation of the elevator, are governed through multiple disc clutches, and the elevator can be operated with the machine moving in either direction, or standing still.

Crane Reduces Log Handling Cost

Replacement of old equipment by new and more efficient machinery is too often delayed simply because, in the eyes of the owner or plant superintendent, the obsolete machinery "is good enough." Machinery that is "good enough" is very often a liability rather than an asset—very often loses instead of makes money for its owner.

A good example of how replacement can lower costs was given by the Abitibi Power and Transportation Company, Iroquois Falls, Ontario. This company now does practically the same work with one machine and five men that was formerly accomplished by two machines and 46 men.

In loading pulp wood logs onto cars two mechanical loaders were formerly employed, one of the loaders working two shifts per day, the second loader operating one shift. This arrangement required the labor of 46 men and under this method the number of cars loaded was 27 per day.

Now, a gasoline, crawler type crane, equipped with a log grapple, has been pressed into service, with the result that working one shift per day and with a force of five men, car loadings average 26 per day.

The crawler crane loads the logs for 9.9 cents per cord. The services of the switching engine and crew included brings the total handling cost to 20 cents the cord. The replaced loaders, owing to the necessity for the large number of men, loaded the logs for a total cost of $1.05 per cord—a cost more than five times that calculated for the crawler crane.

Box Board Industry Working on Simplification of Lines

Manufacturers of box board and representatives of the Folding Box Manufacturers' Association, the National Container Association, the National Paper Box Manufacturers' Association, and of the set-up box industry, following action which was begun last May, have named a central committee to undertake a survey of the industry and to prepare recommendations for definite standards covering carton thicknesses for various uses, it was announced by the Division of Simplified Practice, Department of Commerce.

This committee, headed by George W. Gair, representing the National Containers' Association, the Box Board Association and the Folding Box Manufacturers' Association, is made up of John R. Mauff, of the Box Board Association; H. A. Dickie, of the Folding Box Manufacturers' Association; George R. Browder, of the National Container Association; Frank S. Records, of the National Paper Box Manufacturers' Association, with W. A. Gately, of the Division of Simplified Practice, Department of Commerce, secretary pro tem. Its personnel was selected at a meeting on August 19 in the Custom House, New York City, of representatives of each group, at which conditions in each industry were outlined.

It was pointed out that at the present time there are no standards for carton thicknesses for various uses, that the growth of present conditions has been uncontrolled and illogical, and that this has worked to the disadvantage of both the manufacturer and consumer. The former, it was pointed out, has been forced to make frequent changes of mechanical operation to make small lots of material of various thicknesses, each change of a machine involving a loss of productive time and preventing the fullest output from his equipment which would be possible with an unbroken "dun." The consumer, likewise, has often been responsible for the use of "odd size" material, which contributed to his costs and interfered with the best service possible from the manufacturer.

At the present time, it was conceded, it is imprudent to attempt any changes in the cartons now on the market; but it was indicated that if definite standards of thickness of material are adopted generally, it will be a step toward a more scientific development of carton for the future.

As each of the associations interested will hold its meetings during the next eight weeks, the secretary of each association will be asked to secure the appointment of a simplification committee of his association, such committee to comprise three members each. Surveys will then be inaugurated and the problems of the groups as they affect other groups will be brought before the central committee, in order that the best experience of each may be thoroughly considered in preparation of the recommendations.

September Big Month for Salesmen

The program for activities of the Salesmen's Association of the Paper Industry in New York, Chicago and Dayton indicates that the best year in the history of the Association is being recorded. This month will include outings at Chicago, New York and Dayton, and a special program arranged by President Fearing to reopen the fall series of weekly meetings in New York.

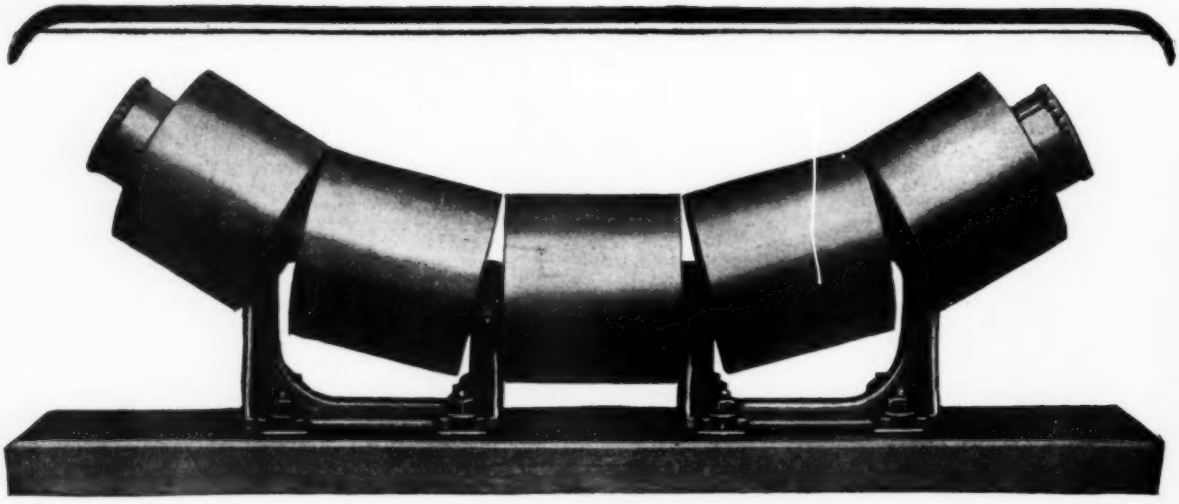
The first event of the month was the New York luncheon at the Hotel Belmont on Tuesday, Sept. 9, where Dr. E. O. Merchant, statistician of the George H. Mead Company spoke, giving a review of current business conditions, illustrated by charts and diagrams. The meeting date was changed from the customary Monday to make it possible to have Dr. Merchant himself a member of the Association, as the guest of the New Yorkers.

Fred N. Countiss, vice-president of the New York division has also arranged the details for the long-planned up-river trip to visit Hudson river paper mills, the party leaving New York Monday night, Sept. 29, returning Wednesday night. The paper salesmen will have an opportunity to see various kinds of paper made, and it is to be an educational tour of the mills near Albany. The party will go to Albany on the night boat, and before the return will visit the West Virginia Pulp & Paper Company, the A. P. W. Paper Company, the Martin Cantine and the Tissue Company mills at Albany, Mechanicsville and Saugerties.

The Chicago division, under the program committee leadership of Robert B. Harbison, will on Tuesday, Sept. 16, repeat its July outing at the Olympia Fields Golf club with silver cups offered to the star golfers and tennis sharks. The first outing was so successful it was decided to have a second trip to the country before the reopening of the fall and winter series of Monday luncheons.

The Miami Valley division will hold its September outing-meeting on Sept. 12 at the Butler County Country club, when there will be golf, a round table discussion of conditions in the paper industry, and a talk by Dr. Merchant such as he gave in New York. These talks have become a regular feature of the Miami valley monthly meetings, and have done much to promote the Association's activity in the Ohio mills.

This elaborate program for September is evidence that the Salesmen's Association is coming back strong for an active fall campaign, after the usual inactivity of the summer months. The fact that the New York and Chicago divisions continued monthly meetings during the summer is another evidence of the activity in this division of the paper industry.



Belt Conveyors

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Power Transmission Machinery—Bearings, Shafting, Pulleys, Machine Molded Gears, Cut Gears, Rope Drives, Chains and Wheels. Elevating and Conveying Machinery—Helicoid Conveyor and Accessories, Belt Conveyors, Chain Conveyors, Elevator Buckets, Boots and Casings, etc. Catalog sent on request.

THE Belt Conveyor, one of the oldest known conveying devices, has a wide field of usefulness. It is practicable to run these conveyors at relatively high speeds, which adapts them well for large capacities, and particularly for conveying long distances.

The relatively light weight of Caldwell Belt Conveyors, in proportion to capacity, makes them a desirable conveyor where supported on trusses of considerable span.

Too, this type of conveyor is well suited, at shorter distances and slower speeds, to handling bagged fuel, pulp and other loose materials.

We gladly offer you the benefit of our experience to aid in the elimination of waste in the handling of materials in your plant. Write or wire Caldwell, or the nearest Link-Belt office.

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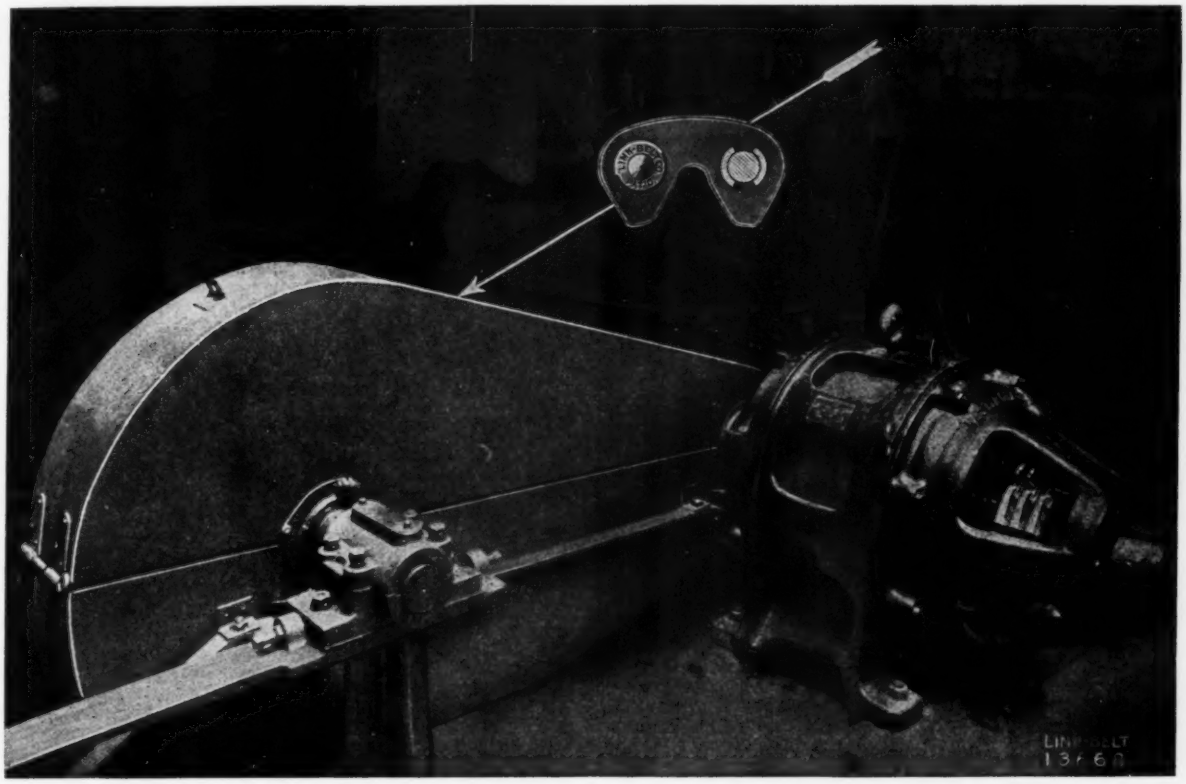

Increased Production 25%

THAT is what the Westinghouse Dual Frequency Super-Calender Drives with Link-Belt Silent Chain did at the Mill of the Kalamazoo Paper Company, Kalamazoo, Michigan.

And yet that is just one of the many benefits the drives brought this company. Briefly, we learn from them that the lighting cost was reduced (light-obstructing line shafting and belts having been done away with), noise was eliminated, physical exertion and fatigue of operators were decreased, and the fire hazard eliminated.

Silent, efficient and durable—unaffected by atmospheric conditions, and requiring practically no care, Link-Belt Silent chain becomes the ideal means for driving machinery of every type direct from the motor. Send for Silent Chain Data Book No. 125.

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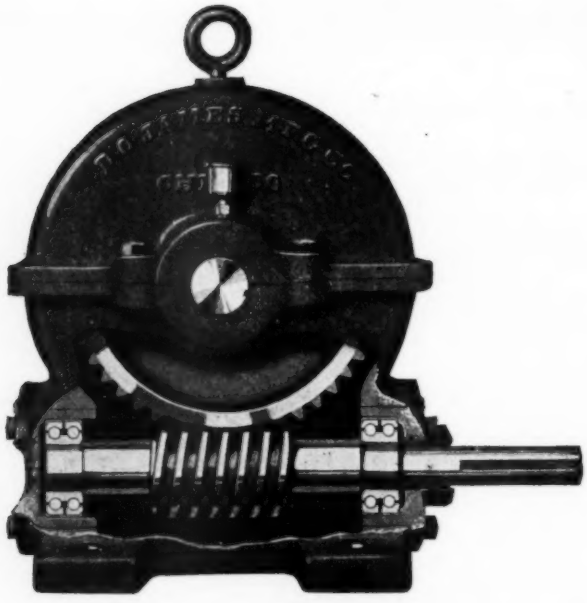

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D.O.JAMES

Early Days of New York Papermaking

The Remington Mills—History of Norfolk and Norwood Mills, Purchase of Remington Interests by Hanna

FOR two years after the sale of the Remington mills along the Black river, in Jefferson county, New York, to the International Paper Company, Charles H. Remington acted as manager of the mills for the International company. But at the end of that time his restless energy sought other fields. He had the pioneer spirit and he wanted to branch out for himself. He was not content in merely managing a group of mills for some one else.

In 1901, with O. E. Martin, of Norwood, St. Lawrence county, he organized the Remington-Martin company and built a big paper mill at Norfolk. This was the first of the group of three Remington mills in St. Lawrence county, built on the Racquette river. Mr. Remington went about the construction of this mill determined to make it one of the best paper mills in the country, and when it was completed it was generally recognized as such. No expense was spared in the first place with this mill and later with the Raymondville mill to make them modern in every respect.

The Norfolk mill was built of concrete and steel, giving the building a solid, substantial appearance. The power at Norfolk was excellent and the dam, semicircular in form, was built so as to extract all the possibilities from the power. The Norfolk plant was equipped with an artificial waterway which brought the wood into the pulp room alongside the grinders. The raceway at this plant is 300 feet long and was excavated in solid rock, costing $40,000.

Mr. Martin was the proprietor of a small pulp mill near Norwood when he became Mr. Remington's partner. Mr. Martin is credited with first having seen the possibilities of the water power at Norfolk and having interested Mr. Remington in developing that power and building the paper mill. The Remington-Martin company was an outgrowth of Mr. Martin's efforts.

Shortly after the organization of the Remington-Martin company, Mr. Remington's father, C. R. Remington, with Francis M. Hugo, a few years ago secretary of state for New York State, and Dr. C. M. Rexford of Watertown purchased Mr. Martin's interest. The company was capitalized at $300,000. C. R. Remington became the president of the company and his son the treasurer and general manager.

Two years after the organization of the Remington-Martin company, Charles H. Remington organized the Raymondville Paper Company and built a large paper mill at Raymondville, a few miles below Norfolk on the Racquette. Associated with him in this enterprise were Mr. Hugo and Frank L. Moore, later general manager of the Newton Falls Paper Company. The Raymondville mill was of the same type of construction as the Norfolk mill.

Mr. Remington installed in the Norfolk mill two Fourdrinier machines, one of them being 164 inches wide, which in that day was the largest in the world. The other machine in the Norfolk mill was 108 inches wide, while in the Raymondville mill was one machine 114 inches in width. Both mills were built so that another machine could be installed later, which was done.

Buys the Frost Mill at Norwood

The third mill in the Remington group was obtained by purchase. L. L. Frost of Norwood had run a paper mill at Norwood for many years under the name of L. L. Frost & Sons Paper Company, his sons being associated with him. In August, 1905, a group of manufacturers in which Mr. Remington was the leading spirit, bought out the concern. It was operated under the name of the L. L. Frost Paper Company until the following year, when the Norwood Paper Company was organized. Associated with Mr. Remington in the purchase of this mill were Francis M. Hugo, E. W. Elsworth and George W. Hanna of Watertown. Mr. Elsworth, who is now a pulp wood dealer in Watertown, managed the mill for five years from 1907 to 1912.

The Frost mill had good water power, and the property was especially valuable inasmuch as it owned all power rights for three miles up the Racquette river. The power at the mill had not been properly developed and in 1910, at a cost of many thousands of dollars, Mr. Remington put in a new concrete dam and flume, increasing the head and consequently the amount of power available. The Norwood mill had one machine, running on newsprint.

When the mill of the Remington-Martin Company was built at Norfolk that village had no railroad facilities. Mr. Remington knew that a railroad was essential to the success of his mill, and in the manner typical to him he decided upon the shortest way, building the railroad himself from Norwood to Norfolk, a distance of four miles. The Norwood & St. Lawrence Railroad Company was organized with Mr. Remington as president.

The paper mill had been begun in October, 1900, and began making pulp in April and paper in June of 1901, and in the spring of 1902 the railroad was extended to Raymondville, a distance of three and a half miles from Norfolk. When the paper mills were sold to the Hannas the railroad was retained by the Remington interests. After the sale to the interests headed by Floyd L. Carlisle the railroad was finally disposed of to Mr. Carlisle. In August, 1909, the railroad was extended to Waddington, a distance of about seven miles from Norwood, which enabled the companies to get their wood supplies from Canada by boat and take them to the mills on their own railroad.

At the time of Mr. Remington's death in 1911, the three mills in the Remington group produced 165 tons of paper daily, which was said to be the fourth largest production in this country, and probably in the world. The value of the mills, with the railroads, was then estimated at $4,000,000.

Although the Remington mills were deeply indebted to the Watertown banks they were prospering under Mr. Remington's direction. His sudden death in March, 1911, after an illness of less than a week, plunged the affairs of the companies into confusion. His death occurred after the death of his father and most of the stock of the three companies was held in the two estates.

For some time the mills struggled along trying to pull out of the confusion, a reorganization committee endeavoring to perfect some plan that would be satisfactory to stockholders and creditors. The large developments of the water power at Norwood and Raymondville had to be completed and depleted the working capital of the companies to a considerable degree. The companies, however, had operated at a profit until the passage of the reciprocity bill which removed the duty on newsprint paper and which led to the building of many new mills in Canada. A considerable over production of paper followed, which depressed the profits of the Remington mills, as well as practically every mill in northern New York, until they nearly reached the vanishing point.

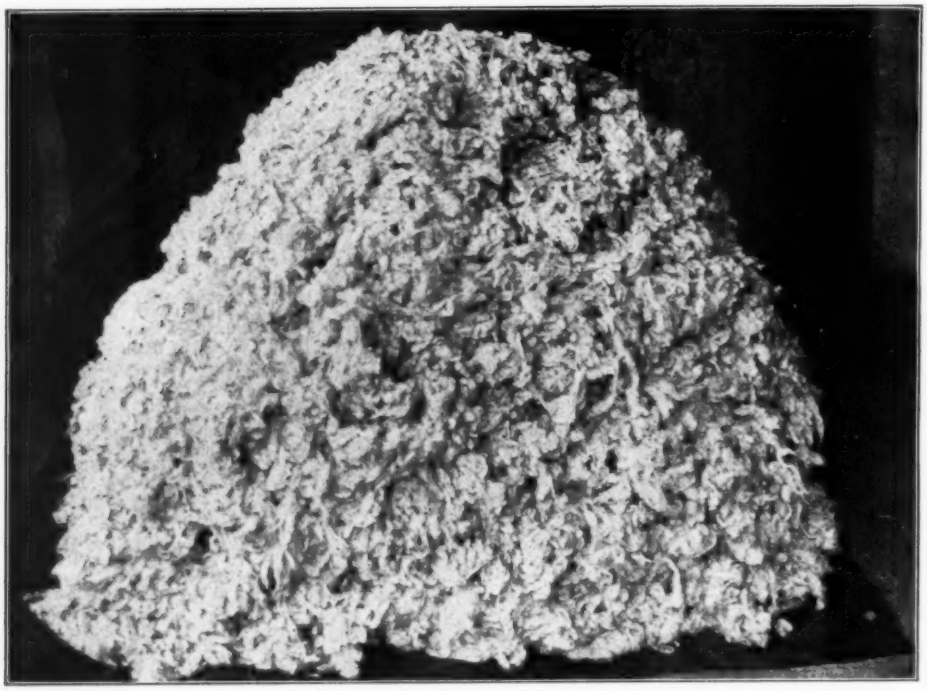
Wilder Purchases Remington Interests

The story of the sale of the Remington group of mills is one almost complete in itself. Rumor followed rumor regarding the mills, many interests sought them, the final sale to Mark S. Wilder coming after a contest between Mr. Wilder and the Pulitzer interests, publishers of the New York World, through the late James A. Outterson. Mr. Outterson was president of the DeGrasse Paper Company, which is owned by The World, and he negotiated for the purchase of the Remington mills.

The three mills filed involuntary petitions in bankruptcy May 8, 1914, with combined liabilities of $2,274,000 and assets of about $3.500,000. Mark S. Wilder was named temporary receiver. The proceedings were entirely friendly and were brought to get a quick settlement of the affairs.

The Remington Paper and Power Company was formed early in October, 1914, the three mills being combined into one company, with a capital stock of $1,575,000 and a refunding bond issue of $1,500,000. Mr. Wilder was elected president, Nelson R. Caswell, vice-president and treasurer and Francis M. Hugo, secretary. The output of the company was about 165 tons a day. The new company began its career in November, 1914 and continued uninterrupted until 1916.

In September of that year the agitation which finally resulted in the sale of the property started. At that time it was announced that a French newspaper syndicate had taken an option on the property, and it was confidently expected that the deal would go through. But the purchase



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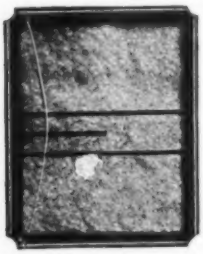

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ONE of the biggest responsibilities that confronts the felt maker is the selection of the material from which the felts are to be made.

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Hamilton Felts

was blocked by the French government, which passed unfavorably on the request of the syndicate to send from that country the money with which to make the purchase. This opposition might have been overcome, but the option expired and it was not renewed.

Learning that the mills of the Remington group were for sale, Ralph Pultizer of the New York World began negotiations through Mr. Outterson. The deal progressed to the point where Mr. Pulitzer and a party of officials came to Watertown to close up the deal. Over $1,000,000 had been deposited in the Watertown banks to guarantee the stockholders their money. On Oct. 11, 1916, Mr. Outterson announced following a meeting of the Remington stockholders that the World had purchased the mills. The next day was Columbus day, a legal holiday so far as the banks were concerned, and the negotiations were temporarily halted.

On the day following Columbus day the stockholders of the Remington companies met again, supposedly to complete the sale. What was the astonishment in paper mill circles after the meeting when Mr. Wilder, president of the Remington company, announced that the World's offer had been rejected, but that the stockholders had voted to sell the property to him for $1,500,000. It was said that one reason for the change in plans was the fact that if the World acquired the mills all of the money would be handled in New York, but if Mr. Wilder got the mills the money would remain in Watertown and the Watertown banks would get the benefit.

Three days after the sale to Mr. Wilder was completed came the first hint that Dan R. Hanna might be interested in the purchase. This rumor came about through the visit of W. P. Leach, of the Hanna newspapers in Cleveland. The formal announcement that the Hannas had purchased the controlling interest was made in the Cleveland Leader of Nov. 16, 1916. The announcement stated that three mills with a capacity of 48,000 tons annually, and with about 18,000 horsepower had been purchased. Associated with the Hannas were Mr. Wilder, who continued for a time as president; Bermingham & Sears, paper brokers; James Whelen of Port Arthur, who had large interests in the paper and wood pulp industry in British Columbia, and William P. Leach.

The transaction turned out most happily for every one connected with it. The Watertown banks got back all that they had put into the mills and the Remington family received a comfortable fortune commensurate with the toil and energy that Mr. Remington had put into the task while living. The mills during the period of war prosperity returned good dividends to the purchaser.

Mark A. Hanna, II, and Carl H. Hanna, sons of Dan R. Hanna, became officers in the new concern and moved to Watertown to take up the management of the property. Mr. Wilder remained with the company for two years after which Mark Hanna became the president and Carl Hanna vice-president. The Hannas made some improvements in the machinery of the three mills and increased the production of the group to a capacity of about 175 tons a day.

Another interesting chapter in the history of the Remington group was written about two years ago when a syndicate headed by Floyd L. Carlisle and consisting of the principal owners of stock of the St. Regis Paper Company bought the Hanna mills. The Hannas had changed the name from the Remington Paper and Power Company to the Hanna Paper Corporation, which name the mills still keep, although for all practical purposes they are merged with the mills of the St. Regis Paper Company.

Washing Brown Stock in Soda Pulp Mills for Bleachability*

By G. K. SPENCE

New York & Pennsylvania Company, Johnsonburg, Pa.

IN THE Soda Process it is a well known fact that the spent liquor should be removed as soon as possible from the stock, after it has been discharged from the digester, in order to avoid staining.

Until recent years the universal custom was to wash in open pans either by direct washing or the cycle system, and this method of washing is in pretty general use today.

There is considerable difference of opinion as to the best depth of wash pan to use. Some use wash pans as deep as 13 feet, but it is the opinion of the writer, after having checked results with pans of various depth, that the stock in the pan should not be more than 5½ feet to 6 feet deep in order to obtain the best operating results.

*Presented at the meeting of the Chemical Pulp Division of the Superintendents' Association, at the Manchester Hotel, Middletown, Ohio, during the Fifth Annual Convention, May 23, 1924.

In selecting wash pans the manufacturer is more or less governed by local conditions. If he is cramped for space, he will of necessity install pans of increased depth. For economy of floor space rectangular pans should be installed. The pulp manufacturer should always bear in mind that in arranging for wash pan installation he has two objects in view, the primary one being the production of pulp and the secondary one being the reclaiming of the greatest possible amount of soda with the use of the least possible amount of wash water. His system should be so balanced that it will efficiently take care of both phases.

The liquor in the pulp when discharged from the digester tests about 12° Be at 60° F., and when using the cycle system of washing (the cycle system of washing was explained by the writer in a paper read before the Technical Association in Chicago, September 25th, 1919), the average strength of liquor going to the evaporators is 10° Be at 60° F., or a drop of 2° Be, due to the wash water used. In obtaining these results the wash water was turned to the drain when it tested 1° Be at 60° F., which according to table given below means a loss of 45 pounds of soda or .86% recovery at this point. The locked up system of washing has been used in some mills and results obtained are commendable. By this system there is no drain line. When the strength of the washing from the pan reaches 1° Be at 60° F., where it is ordinarily turned to the drain, it is thrown on a strong pan and washing continued until complete. This system of washing decreases the strength of evaporator liquor about 1° Be, and the saving of soda will just about overbalance the extra steam necessary at the evaporators. By some this system of washing has been considered false economy, but where it has been installed the ultimate results have proven to be of considerable advantage to the recovery department. By this system there is no chance for loss of liquor due to the carelessness of the workmen, and all who have had experience with recovery control work will agree that there is a greater chance for a big loss of soda due to carelessness in this department, than in any other department of the recovery system.

It must be born in mind that the stock must be washed as thoroughly as when washing to the drain, it being necessary to completely remove the spent liquor from the fibre in order to bleach it economically. It is also advisable to thoroughly remove the soda to prevent deterioration of the color of the bleached pulp on ageing due to occluded soda in the fibre.

The water used to wash the pulp should be as hot as possible, and the pulp should not be allowed to remain in the pan very long after it is discharged from the digester before starting the system of washing, as the stock has a tendency to stain when remaining in contact with the black liquor for any length of time. This stain is hard to remove and necessitates the use of more bleach to do so. The following table compiled by the writer will give the amount of soda remaining in the stock while draining in pans 6 feet deep:

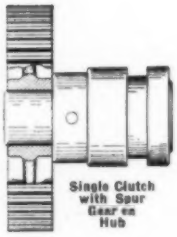
Strength of liquor draining from pan	48% soda remaining in the stock
12° Be at 60° F.	5,200 lbs.
11½° Be at 60° F.	4,695 lbs.
11° Be at 60° F.	4,185 lbs.
10½° Be at 60° F.	3,700 lbs.
10° Be at 60° F.	3,250 lbs.
9¾° Be at 60° F.	3,035 lbs.
9½° Be at 60° F.	2,825 lbs.
9° Be at 60° F.	2,425 lbs.
8½° Be at 60° F.	2,045 lbs.
8° Be at 60° F.	1,705 lbs.
7¾° Be at 60° F.	1,550 lbs.
7½° Be at 60° F.	1,405 lbs.
7° Be at 60° F.	1,345 lbs.
6½° Be at 60° F.	1,125 lbs.
6° Be at 60° F.	925 lbs.
5½° Be at 60° F.	765 lbs.
5° Be at 60° F.	625 lbs.
4½° Be at 60° F.	500 lbs.
4° Be at 60° F.	400 lbs.
3½° Be at 60° F.	320 lbs.
3° Be at 60° F.	250 lbs.
2½° Be at 60° F.	185 lbs.
2° Be at 60° F.	130 lbs.
1¾° Be at 60° F.	110 lbs.
1½° Be at 60° F.	85 lbs.
1¼° Be at 60° F.	65 lbs.
1° Be at 60° F.	45 lbs.

By use of the above table the recovery control man can determine the recovery loss in this department by testing the

THE JOHNSON FRICTION CLUTCH

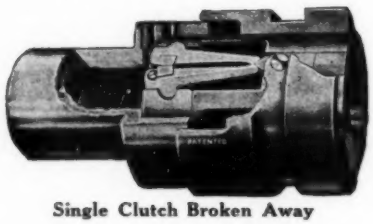
as used on

The Langston Combined Paper Corrugating and Double Facing Machine



Single Clutch with Spur Gear on Hub

The Langston firm says: "The Clutch being small, is easily mounted — we find your Clutch extremely satisfactory for the purpose."



Single Clutch Broken Away

A No. 5 Johnson Single Clutch with gear mounted on hub is used on the machine shown below. It drives a trip cam on the traveling cut-off at the extreme left of the long machine. This allows bad sections in the paper to pass through the machine and be cut out. Because of their strength and durability, and the small space which they occupy, Johnson Clutches are especially adapted for paper machinery.

Courtesy: Samuel M. Langston Co., Camden, N. J.

The reaction to Johnson Clutch service is nation-wide. Machine builders all over the country are adopting it. Almost every trade paper you pick up these days tells of still another new machine adopting the Johnson. You can lower your cost of producing by using the Johnson. Small and compact, yet strong and powerful, it is a thoroughly satisfactory clutch. Our engineers can solve all your clutch problems.

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strength of the spent liquor when it is turned to the drain, when using a system which is not locked up.

When the stock is thoroughly washed the most simple method of removing it from the pan by hosing it down, is to have the wash-out opening closed by means of a plug which can be raised and lowered hydraulically. The reason for mentioning this simple device is because the writer knows of mills equipped with pans having an outlet at the side which opens into a box arrangement through which the stock is washed to the pump. This side opening is closed by means of a large plate and it is necessary for the operator to get into the box and remove the plate when the stock is ready to be washed down, and replace the plate again after the stock is removed. It requires a considerable time and labor to remove and replace all of the nuts which hold this plate in place every time a pan of stock is washed down, while the hydraulic method is very simple to handle. If a mill is equipped with sufficient pans to wash sufficiently by the cycle system and cause no delays in this department, it does not seem advisable to change to any other system of washing. Should one be contemplating the equipment of a new soda mill (which is hardly possible at this time) or revamping an old mill which requires the changing over of the washing equipment, it is advisable to investigate the newer systems of washing pulp before taking any steps.

Pulp Washing by Means of Filters

There is no question but that pulp washing by means of continuous filters is now carried on very successfully in Soda Pulp Mills. The installation at the Champion-International Mill, Lawrence, Massachusetts, Oxford Pulp and Paper Mill, Rumford, Maine, and the Ford Pulp Mill, Detroit, are all operating efficiently.

The economy of floor space required when washing with continuous filters should appeal to the pulp manufacturer who is cramped for space. They also require very little attention and will reduce the labor necessary in this department. By this method of washing the pulp is uniformly washed and the liquor going to the evaporators is free from fibre, which eliminates the necessity of installing a filter or other apparatus for this purpose.

From the result of tests made in one mill operating continuous filters, the soda content of the fibre was .5 pound per 100 pounds of pulp washed. However, this result was obtained by washing with water only, in which case the dilution of the spent liquor was from 1.5° to 1.75° Be. The average temperature of liquor from continuous filters is about 15° less than that from pan washing, when using same temperature wash water.

The results obtained experimentally with the Elmore continuous centrifugal machine have been very promising and no doubt this apparatus will some day be made to operate successfully on washing black liquor from brown stock.

When Messrs. Collins and Kessler operated this machine experimentally the stock was first centrifuged without use of any wash water and the resultant liquor tested 11.9° Be at 100° F. The discharged stock only contained 56 per cent moisture and the caustic soda content was 2.4 per cent on air dry stock.

After two washes, which did not consume as much water as pan washing, the soda content of the stock was reduced to .08 per cent on an air dry stock basis, which is equally as good results as can be obtained by any system of washing. If this system can be perfected so that in the large machines arrangements can be made to do the washing part way down the machine and procure the results with one passage, this will make the centrifuge idea of washing very practical, provided the power factor is not too high.

The Haubold self-unloading centrifuge has been advocated by Mr. Emil Lungwitz for washing brown stock, but the writer does not have any figures on results obtained from experimental runs with this machine.

The American Process Company's automatic continuous screw press which is used for de-watering fibrous organic materials, might be used to advantage for quickly removing black liquor from brown stock, and no doubt experiments with this method of washing would prove very interesting.

As stated above the pulp should be freed as quickly as possible from the black liquor and eventually the method which will be generally adapted for pulp washing is the one which will accomplish this result completely in the shortest time and at the same time furnish the strongest resultant liquor for the evaporators.

In the past the old pan washing system seemed to satisfy the pulp manufacturer and he paid little attention to improvements in this department, but conditions are different today, and he realizes that in order to save bleach the black liquor must be removed as quickly as possib'e. The continuous filter idea is a step in this direction, and if the centrifuge idea can be perfected it will accomplish even better results in this respect. One operator claims the saving of one pound of bleach per 100 pounds of stock washed by use of the continuous filters, and this saving is evidently accomplished by quick removal of the black liquor and probably a little more complete removal than by his previous pan washing system.

The soda manufacturer is now thoroughly aroused to the fact that everything possible must be done to improve conditions in all departments of the mill, and we can look forward to a succession of improvements in the process of washing brown stock for bleachability.

The Beater of Today*

By CHARLES SHARTLE
The Shartle Brothers Machine Co.

I WAS asked to address you on "Beaters" and then I learned that the subject was changed to "Beaters up to Date." Now, while this might not at first thought make much difference, I realize that there is quite a difference. For instance, there are many different kinds of beaters on the market today, and I am sure every manufacturer and user claim that their design is the best and most up to date. While one type of beater will be entirely satisfactory on one kind of stock, it would be absolutely worthless on some other grade of stock. Some years ago I came to the conclusion that every kind of stock required a different type of beater, and not only a different type, but the filling used should be different, the spacing of the fly bars, the thickness of the cutting edge of the fly bars, the kind and style of bed plate should also be considered. Builders of beaters seem not to have recognized this fact and because they sell the same design of beater for all kinds of stock they should make a study of the purpose to which the beater should be used and then construct a beater for that particular purpose.

I know of some beaters which were sold for newsprint using 85 percent ground wood and 15 percent sulphite. These beaters were equipped with an elaborate adjusting device for the raising and lowering of the roll and when in actual use this device was never used, the elevation of the roll was never changed.

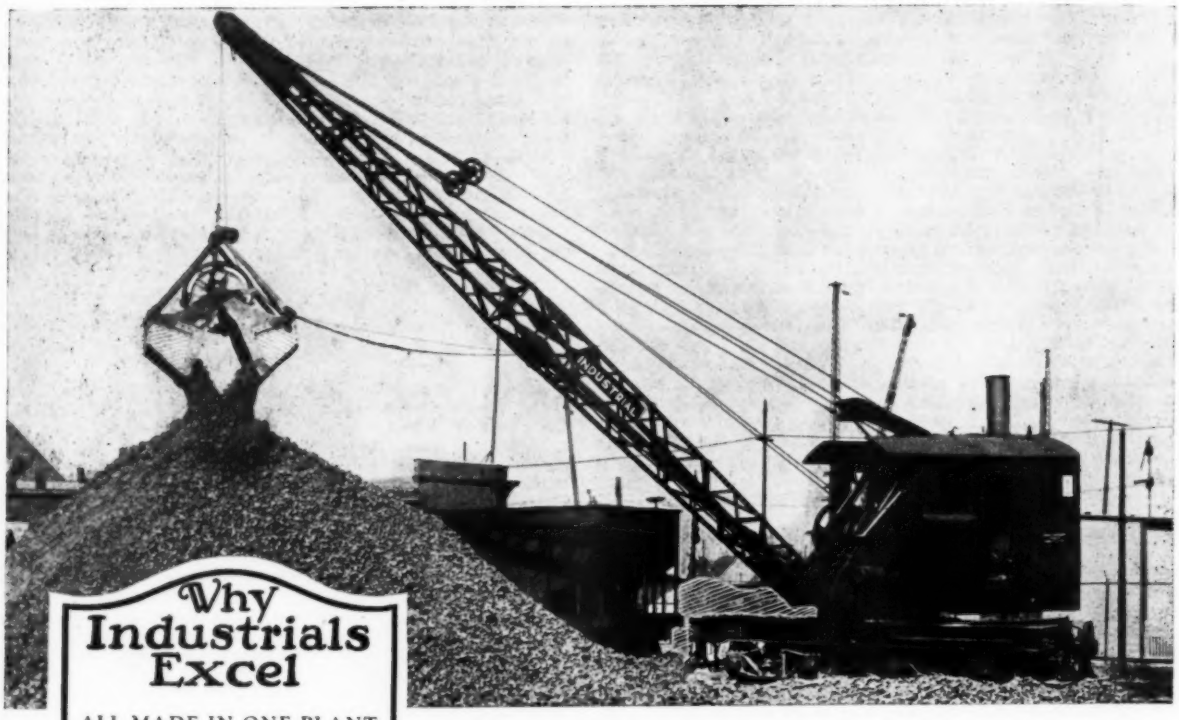
Now, I am more or less familiar with various types of beaters, both new and old, and it seems to me that the beater which is up-to-date is the same beater which my grandfather made stock in, namely the Hollander.

Just remember this about the Hollander—you can take it and make any kind of stock in it that you wish, and to the best of my knowledge this cannot be done in any other beater. Other beaters are off-shoots of the Hollander, but it still remains the best all around beater, so I say that the Hollander is the beater up-to-date.

I mention these cases just to bear out my statement that a beater should be designed for the purpose for which it is to be used, and it is just as important as it is to design a paper machine for the kind of paper that is to be made, and I further believe that to get up a beater for any kind of stock is no little job but will require a lot of time and expense. I must confess that I really do not know much about beaters for the different kinds of stock, for the reason that I have worked for fourteen years and spent a lot of money (how much I am afraid to tell you), developing a beater and a process for treating paper stock for the filler of box board. Please notice that I say filler and that the liner is a different subject, and I have not had time nor money to spend on this and will say that it will require just about as much time as I have given to the filler stock. It always seems queer to me how an idea will get into one's head, and how obstinately it will stick there and that is how I got started on this subject, and I am sure if I had realized how much hard work and the time spent and the disappointments that were in store for me, not to mention the cost in dollars, I would never have started on it. I am sure you will be interested in knowing my story, so here is how it all happened.

One day I was in a box board mill watching a beater being filled with mixed paper stock, it seemed a pretty slow job to me because there were three men at work. Most of the time was put to sorting out dirt and strings and tearing up the largest pieces such as boxes, and punching the stock under the roll, when the beater was filled. I put my hand in the beater and the idea came to me that about seventyfive percent of that stock was ready for the Jordans and all it required was soaking and because it being old papers, it had been beaten and

*Presented at the Fifth Annual Convention of the American Pulp and Paper Mill Superintendents' Ass'n, at Dayton, Ohio, May 23, 1924.



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WE KNOW OF PLANTS where the yard, shipping and receiving payroll is so high that total production cost almost equals their competitor's selling prices. These plants are not equipped with INDUSTRIAL locomotive cranes. We have on file thousands of installation records, showing a decrease in material-handling costs so low as one-tenth of the cost before the installation of INDUSTRIAL cranes.

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There are 17 standard types of INDUSTRIAL *cranes with a capacity range from 5 to 200 tons. All are fully illustrated and described in our Golden Anniversary Catalog, a copy of which will be forwarded to you promptly upon request*

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Locomotive Cranes, 5 to 200 Tons -- Transfer, Pillar & Gantry Cranes
Railway Pile Drivers -- Combination Crane Pile Drivers -- Transfer Tables
Portable Rail Saws -- Grab Buckets -- Magnets -- Steam Pile Hammers

INDUSTRIAL LOCOMOTIVE CRANES

made into paper two or three times, and would not require any further beating, but merely Jordaning. The problem was then how to mechanically separate the fine stock from the coarse. I thought a screen would do it, and that seemed simple, so I set a screen up so one end projected over the side of the beater and put scrapers in the screen so the stock too coarse to go through the plates of the screen, would be returned to the beater. The stock was removed from the beater by a mechanically operated dipper. I also set up a feltless wet machine to receive the stock which passed through the screen plates and by this means removed the water from the stock and made the stock the proper consistency to be sent to the Jordan chest. This seemed such an advance that I thought I was through experimenting, but I soon found that the dirt and iron accumulating in the beater soon broke up the fly bars and bed plates. The next move was to use two beaters, one as a breaker in which the roll missed the bed plate about three inches, and I found that the accumulation of iron did not damage the roll. As fast as the stock was furnished to the breaker like amount of the finer part overflowed—a depression cut out of the side of the tub to a specially designed pump. This stock was elevated into a long wide trough in which it was thinned down to about one-half of a percent consistency. All the heavy materials settled to the bottom and the light material such as wood and cork came to the top and was skimmed off. This stock then flowed to a screen equipped with heavy scrapers which carried the stock which was too thick to pass through the plates into the second beater. With this stock was the rags and strings. The roll in this beater was set just hard enough to reduce the stock which, as fast as it was reduced, passed through the perforations in the back fall. The stock which passed through the screens then went to a feltless wet machine then to the Jordan chest. The water from the wet machine was returned to the settling trough.

Now I thought I had the bull by the horns, but I found the box board makers did not agree with me. We did install some systems and quite a few of them are still running and giving the users great satisfaction. However, it was not universally accepted at the time. I believe this system will at some future time come into universal use because it does make good clean stock and at the same time reduces all the rags and strings, making good stock out of them, and mixing them uniformly with the other stock.

Designing Beater to Meet the Condition

Now it came to my mind that a beater should be designed for the particular kind of stock for which it was to be used. The first one we installed with all of my ideas was in the mill of the Richardson Company at Lockland, Ohio. I will show you a picture of this system. It is set in a new warehouse located about 800 feet from their beater room and the stock from the beating system is transferred with a 12"x20" triplex pump working under a head of forty-five feet and the capacity of this system is limited to the capacity of the pump which is about 150 tons per day. The tub of the breaker is 75 feet long, 19 feet wide and six feet deep and holds nine tons of stock. You will notice that the top of the tub is only ten inches above the floor, the breaker roll is 84" diameter 84" face and is fitted with fly bars which are 12" wide and 1" thick and spaced 10" apart. Under or back of the roll is a Brownell Buehler patented back fall with ¾" holes drilled in it. As fast as the stock is reduced it flows through these holes and is picked up by a 12"x20" triplex pump and transferred to the settling trough which is 54" wide, 36" deep and 70' long, then to three feltless wet machines, the cylinders of which are 108"x36". The stock from the wet machines goes to a chest of a proper and very uniform consistency. The water from the wet machines is returned to the settling trough. The stock is charged into this breaker in large parcels. A 1,000 pound bale is charged in about three pieces, or about 300 pounds per charge. Seven men operate this system. They truck in the stock, charge it into the breaker and operate the whole plant. 250 H. P. is used to operate it. On plain chip producing 150 tons this is all the power expended before the stock goes to the Jordan.

I have some figures on power which might be of interest to you and which I will gladly give to anyone interested.

I have also some figures which will give you an idea as to the amount of dirt which can be removed by our process of precipitation.

My whole object has been to remove all foreign material and put the stock into the Jordan just as clean as if it were ground wood. I am not able to give you very accurate figures of the amount of dirt which is removed by our system other than to say that in the mill of the Ball Bros. Co., Muncie, Ind., we have a record of their having charged into the breaker 300 tons of stock and there passed through the perforations in the back fall, which are ¾" diameter, five tons of dirt and please bear in mind, this does not take into account the large amount of foreign material which remains in the breaker being too large to pass through the perforations in the back fall. In the mill of the Eddy Paper Corporation in one week's time they charged in 600 tons of stock and removed from the settling trough 127 wheelbarrow loads of dirt. The mill of the Western Board and Paper Co., Kalamazoo, Mich., have installed one of our breakers with a perforated back fall, but it is not equipped with the complete system, i. e., the settling trough and thickeners. In this mill without increasing the labor in the beater room and without increasing the power, they found it necessary to increase their dryers one half and they have increased their capacity from 45 to 75 tons per day. In the year prior to this installation in the Western Board they used thirteen sets of Jordan fillings and nine sets of fly bars. In the year after our breaker was installed they used three sets of Jordan fillings and no fly bars.

Now, in closing I wish to disclaim any intention of blowing my horn, or, in other words, trying to advance the interest of the Shartle Brothers Machine Company. It is difficult for a man with my experience to talk on beaters without dwelling on that which he knows the most about. I feel that I do know how to beat filler stock on board machines and it necessarily follows that in order to talk intelligently, I must draw largely on my own experience.

Tinting of White Paper *

By JOHN R. ROBERTS

I HAVE attended several similar meetings and have read all the papers presented at all the meetings and conventions in the past few years, but have failed to hear or read any discussions on dyestuffs used for white papers. When asked to present a paper regarding dyestuffs at this meeting, I decided something on this subject might be more interesting than a discussion of dyestuffs in general.

Something over twenty years ago when I was fortunate, or possibly unfortunate enough to begin the study of the application of dyestuffs to paper, I was under the impression that white was white, and as a matter of fact the first mill with which I was connected made only three whites, a cream white, a standard white and a blue white.

Since then I have learned that the number of so-called whites is almost infinite, one large mill which I recently visited using around a hundred color formulas in the various grades, shades and finishes. It will therefore be seen that the coloring of white papers, although possibly not so complicated as the coloring of deeper shades, is still quite an important problem.

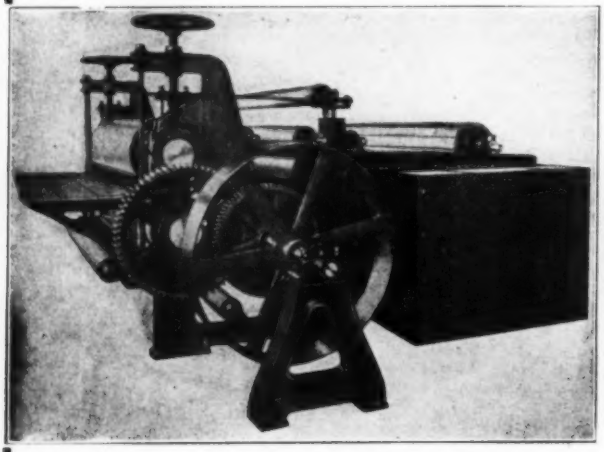
As the stocks themselves on which white shades are dyed vary greatly in their behavior under the action of light and also have a large influence on the shade produced by a given dyestuff, they will be considered first. As you probably all know, ground wood and unbleached sulphite possess the least permanency to light. Ground wood will dull and darken in a short time, and unbleached sulphite will take on a reddish brown color on very short exposure to light. These stocks show the same changes, although the action is much slower, when kept in the dark and excluded from the air. At one mill in which I worked, we made a specialty of a white dry finish on a furnish of unbleached sulphite, our samples being taken fresh from the machine and stored in wrapped bundles in a dark sample room. In the case of this white it was impossible to match succeeding runs to these samples as they turned dull and red in a week's time. It is obvious that it is a waste of effort and money to dye stocks which are not permanent themselves with fast to light colors.

To go to the other extreme, bleached rag shows the least change under the action of light, bleached sulphite being a close second in this respect. Our laboratory has made light tests of these stocks and the results might be of interest. We have found our New Jersey sunlight is not very dependable, especially in the spring, and it was therefore necessary to use the fadeometer in making these tests, but the results obtained with the fadeometer in making these tests are very comparable with those obtained with sunlight. Ground wood and unbleached sulphite showed the maximum change in about two hours. Bleached soda showed an appreciable change in sixty hours, while it took eighty hours to make a perceptible change in bleached sulphite. Bleached rag was practically unchanged after one hundred hours' exposure.

In speaking of the colors used for white papers, I shall

*Presented at the Fifth Annual Convention of the American Pulp and Paper Mill Superintendents' Association at Dayton, Ohio, May 23, 1924.

Pulp and Paper Mill Machinery



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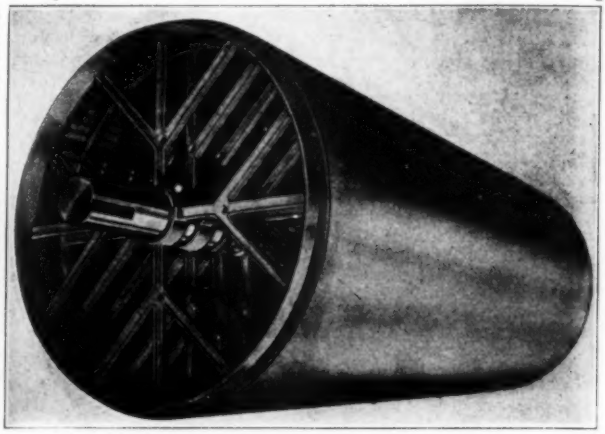

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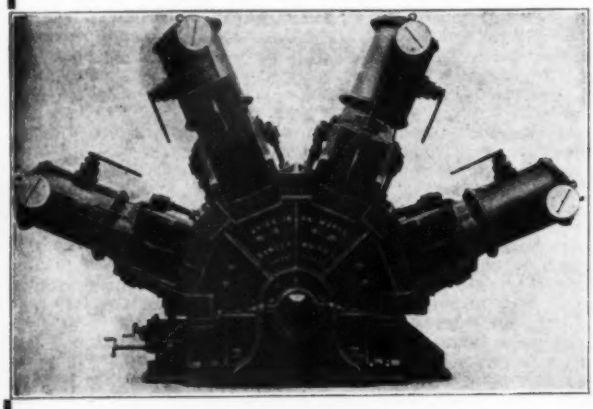

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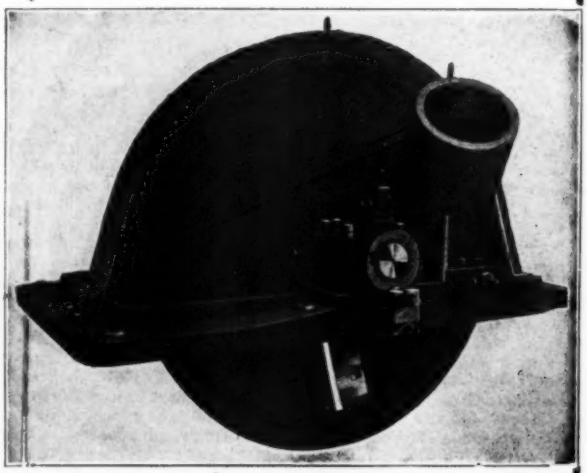

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Bangor, Maine

speak of the blues only, as the main points I wish to bring out are their comparative properties and costs. Some mills use one shade of tinting blue or a combination of a red and a green tinting blue to produce various shades of white. The results are satisfactory in mills where conditions are such that there is no appreciable variation in the color of the stock. In other mills, this color varies and it is necessary to use a small amount of shading red to control the shade.

Tinting blues may be classified according to their increasing fastness to light as follows:

1. Basic blues.
2. Acid blues.
3. Heliopont blues, solar blues, etc.
4. Vat colors prepared for paper as the Indanthrène and Ponsol colors.
5. Ultramarine blue.

Direct blues are seldom used for tinting white as they lack brilliancy and have a tendency to mottle the fiber, particularly on mixed furnishes. Basic colors of course give the same trouble, but they are usually used on cheap furnishes where the mottling effect is not so objectionable.

Use of Basic Colors

The basic colors are used principally on unbleached stock, in newsprint and similar sheets, although they are used to some extent also on bleached stock in cheap book and magazine. Methyl violet and methylene blue are the colors used for this work, and they are sometimes mixed and sold to the trade under various names such as news blue, basic blue, etc. Another dyestuff which gives a decidedly brighter shade is Paper Blue R Conc. Alone or shaded with Rhodamine B this color gives the brightest white obtainable and in addition it has another advantage in that it is unaffected by hard water. Mills using hard water which dulls the other basic blues and violets will experience no such difficulty when using Paper Blue R Conc. and obtain a much brighter white.

The basic colors should be added to the beater in weak solutions of not over two pounds of dyestuff to 50 gallons of water, this being a concentration that will tend to reduce the mottling effect to the minimum and also be of the right strength to add to the beater in pints. The solutions should not be kept for more than one or two days at the most as the dyestuff tends to precipitate out and this weakens the solution.

The acid or so-called "Soluble Blues" rank next in fastness and find considerable use in the tinting of book, magazine and even newsprint. They are fairly fast to acid but somewhat sensitive to alkali, and possess the advantage over basic colors in being much faster to light and in giving even dyeings, no mottled effect being produced even on mixed furnishes.

The acid blues are added to the beater in solution, the concentration of which may be as high as five pounds to 50 gallons of water. The solutions are much more stable than are those of the basic colors and may be kept without appreciable deterioration for a period of a week or even longer. However, a shorter period is advisable as evaporation occurs which tends to concentrate the solution.

The Heliopont and Solar Blues, the principal brands of this type, are probably used more at the present time than any other type of tinting blue with the possible exception of basic blues for newsprint. Their sale in the last few years has amounted to enormous quantities and seems to be increasing.

With respect to cost and fastness properties, they fill in the gap between the comparatively fugitive acid colors and the permanent vat colors. They are placed on the market as finely divided pigments in both paste and powder form, the latter being used more extensively in the trade.

These products are manufactured in shades ranging from greenish to reddish blue, thus allowing of varied selection. They are of excellent fastness to light, of good fastness to acid and fairly fast to alkali. They are very suitable for bond, writing, envelope, book and magazine or any paper where absolute permanency is not a necessity.

The Heliopont and Solar Blues may be added to the beater in the dry powder or reduced to a thin paste with water and added in pints. The former is preferable for if the paste is not thoroughly stirred before using, the shade will not run uniform.

Ultramarine Blue possesses extreme fastness to light but has several disadvantages. It is sensitive to acid and besides being destroyed by acids coming in contact with the finished sheet, has a tendency to "go back" or lose strength when lying in the beaters or chest over any length of time such as a Sunday shut-down. It also has a tendency to give two-sided effects. Ultramarine Blue is used to some extent in medium to high grade papers and for coating whites.

The Indanthrène Blues were developed and put on the market by the Badische Company several years before the war. At the present time there are two brands of this type of color on the market, the Indanthrène Blues which are imported and the Ponsol Blues which are manufactured in America. They are prepared for paper from the vat colors and like the vat colors when dyed on textiles may be considered absolutely fast to light, as they will stand up almost indefinitely in sunlight. They have other advantages among which are extreme fastness to acid, alkali and chlorine. They are unchanged from the action of any chlorine which may be left in the stock, and this property makes them of particular interest to mills which have trouble with poorly washed stock.

This type of color is unquestionably the best to use for producing permanent white shades on high grade rag content bonds and writings and similar papers.

Our laboratory has made comparisons of these colors for cost and fastness to light, the exposures being made to direct sunlight. The runs were made on our small paper machine and 20 oz. of Heliopont Blue M per ton of bleached sulphite were used as a base, as this gives a full neutral white. The results may be put in the form of a table. The time given was that required to practically destroy the color.

	Amount per ton	Cost per ton	Fading time
Paper Blue R Conc.....	.64 oz.	$ .07	2 hrs.
News Blue B Conc.....	.8 oz.	.068	2 hrs.
Soluble Blue R	1.25 oz.	.195	8 hrs.
Heliopont Blue M.....	.20 oz.	1.25	60 hrs.
Ultramarine Blue	5 lbs.	1.15	
Ponsol Blue RP Triple Pdr...	18 oz.	5.04	

At the end of the 60 hours the Ultramarine and Ponsol Blue RP Triple Powder dyeings were somewhat faded, the Ultramarine showing the most change.

Electric Steam Generator Saves Fuel

Coal savings estimated at 3,000 tons per year are expected to result from the installation of an electric steam generator recently ordered by the St. Croix Paper Company at Woodland, Me. Improved power factor and utilization of spring and fall high water are looked forward to from other up-to-date electrical machinery now being installed.

The hydro-electric plant of this company is on the St. Croix river and is twelve miles from the company's mill. A General Electric 3,360 kilowatt, 2,400 volt, vertical waterwheel generator is now being installed to be used as a spare unit and to permit the utilization of high water in the spring and fall for the generation of excess power. This excess power may be used either for the making of wood pulp or for running the electric steam generator. Wood pulp made in this manner during the flood season will be stored away as dry pulp laps and be made into paper during the dry summer and fall months.

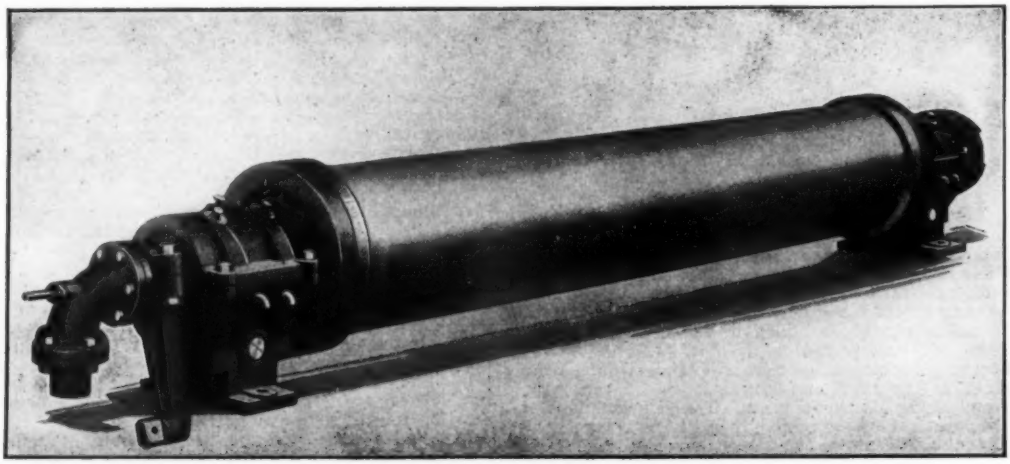
Officials of the St. Croix Company and General Electric engineers estimate that the new generator may produce as high as 15,000,000 kilowatt-hours excess power at high water periods with a normal rainfall. By putting this power into the electric steam generator they expect a saving of approximately 3,000 tons of coal a year. The steam generator is to be located in the boiler house and will be piped into the main steam line, supplementing the coal fired boilers. Steam necessary to heat the mills on Sundays and holidays, when the motor load is shut off, will come from the electric steam generator, and the load curve of the mill will be ironed out by having the steam generator take up the variations in electrical load on the mill from time to time.

An 1,800 horsepower, 2,200 volt, synchronous grinder motor, to be direct coupled to pulp grinders, is also being installed. Present wood grinders at the paper mill are part motor driven and part waterwheel driven, and are of the packet type. The new motor will also drive pocket grinders, but will be so arranged that magazine grinders may be installed later. In addition to the necessary switchboard equipment, a 6,000 K-va. transformer has been ordered to step down the voltage from 33,000 volts to 6,600 volts for use in the electric steam generator. The electrical machinery already installed was made by the General Electric Company, which is also supplying the additional electrical equipment.

Three definite results are expected by the St. Croix officials: Power factor correction by the synchronous grinder motor; the utilization of otherwise waste energy by working up raw material in advance of requirements, and the substitution of a certain amount of electrically generated steam for the steam ordinarily produced by burning coal.

The Continental Paper Co., Bogota, N. J., is installing a new boiler house to contain 765 h.p. Kidwell boilers. Karl A. Lefren of New York is the Consulting Engineer.

No Adjustments Required



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Common-sense bearings about one-half diameter of shell. Infallible alignment of suction box to shell, no adjustments required. No wear on packings, therefore no replacements required. Direct jaw clutch connection to driving shaft, no gears. Less power to drive roll.

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Canadian Section

September 1, 1924.

Market for Canadian Newsprint in Australia

Canadian pulp and paper interests are looking for the conclusion in the near future of a trade agreement between Australia and Canada which will make it possible for the news print mills here to supply a share of the requirements of the sister Dominion.

The present Australian import preference of $15 per ton to the English mills, of nearly 20 percent ad valorem, is an almost prohibitive handicap; but the rejection by the British Parliament of the imperial preference proposals appears to have caused an attitude in Australia more favorable to a trade arrangement with Canada.

The Canadian pulp and paper industry has probably more to gain than any other industry here from such an arrangement. Preparations are being made to develop trade with Australia as soon as import conditions there are made more favorable to the Canadian product.

Aerial Forest Patrol Justified

The Ontario government's expenditure for the establishment of a forest patrol fleet has been justified by operations this year, according to forestry officials in Toronto. Recent efforts have been made to analyze cost upon some unit basis and it has been found that the timber in a whole township can be examined thoroughly in one day at a small cost. The task of surveying timber resources of the north during the fire season is a comparatively simple matter as far as cost is concerned.

The department has found it advisable to equip its air fleet of fourteen machines with ten extra engines so that repairs may be made without the loss of much time. Fires can be discovered at their inception and extinguished before they are well under way. The saving to the government in timber justifies the existence of the air patrol. In the absence of serious fires the fleet is engaged in making forest surveys and mapping out forest areas according to type characteristics.

Teaching Fire Prevention

The Department of the Interior has had installed in the main passage way of the Union station at Toronto, a remarkable chart designed to impress the incoming settlers and tourists with the danger of forest fires and the importance of timber conservation. The chart depicts in realistic fashion the total forest resources available and the speed with which they are being utilized.

Real samples of the woods are used and each specie is represented by a strip about an inch and a half wide, a quarter of an inch thick, and of a length proportional to the amount to be indicated. Printed figures and complicated graphs are not used in the arrangement of the chart. The chart shows that the total amount of marketable spruce in Canada is sixty-six times that used or destroyed every year.

Forest Protective Association Formed

To protect the forest resources and to co-operate with the provincial forest fire prevention service, the Southern St. Lawrence Forest Protective Association has been incorporated with a capital of $200,000. The head office is Quebec City.

The plans of the incorporators are to devise and install an efficient system of protection in the counties of Bellechasse, Montmagny, L'Islet, Kamouraska, Temiscouata, Rimouski, Matane, Bonaventure, and Gaspé; to prosecute transgressors of the fire law; to operate a protection telephone service.

Bay Sulphite Taken Over by Port Alfred

Official announcement has been made of the taking over by the Port Alfred Pulp and Paper Corporation of the Bay Sulphite Company, Limited. The president of the new company is R. O. Sweezey, of Montreal, and the other officers are: J. H. Gundy, vice-president; Arthur Cross, managing director; J. W. Ross, C. E. Taschereau, E. A. Macnutt and Eugenè Bergeron. Messrs. Sweezey and Gundy are well known figures in the financial world generally and the bond business in particular. Messrs. Cross and Ross are of the well-known accounting house of P. S. Ross & Sons. Mr. Tashereau is prominent in Quebec circles and is a brother of Premier Taschereau, of Quebec; while Mr. MacNutt is one of the leading lights of the Sun Life staff. Mr. Bergeron is superintendent of the mill.

The Bay Sulphite Company, Limited, was organized at the suggestion of the British government and through the co-operation of leading British and French newspapers and paper manufacturers, including companies owned by or supplying the London Times, Daily Mail, Daily Telegraph, Daily Mirror and Evening News. The company commenced operations in 1918 with an annual output of 28,000 long tons of sulphite, and this capacity has since been raised to 40,000 tons.

The mill is one of the lowest-cost producers of high grade pulp in America, and is constructed and equipped in accordance with best modern practice. It is ideally located on tidewater at Port Alfred, on the Saguenay River, combining the advantages of proximity of wood supply with the ability to load large ocean vessels directly at its own wharves.

The mills have never ceased operations, and these have been conducted on a profitable basis. At the present time it is stated by interests closely in touch with the company's affairs that, after adding the fixed charges of bond interest, the company is producing sulphite cheaper than any other company in eastern Canada.

While no announcement has been made to that effect, it is reported that the company's intention is to enter into the manufacture of newsprint very soon, with about 100 tons a day to start with. It will then in all likelihood become an important customer of the Duke-Prince Power Company, Limited.

Price Brothers Pass the 500-Ton-Capacity Mark

With the completion of the installation of the second of their two new news print machines at the beginning of last month, Price Brothers have brought their capacity up to over 500 tons a day, making them the largest single news print mill in Canada. The new machine was made by Charles Walmsley & Co., and is a duplicate of another machine that started to produce early in the year and that has been repeatedly making and breaking world records for daily output. The last one reported was slightly over 110 tons in 24 hours; but it is likely to be bettered almost any day. Price Brothers are going steadily ahead with their expansion program, which calls for an ultimate production of 900 tons a day.

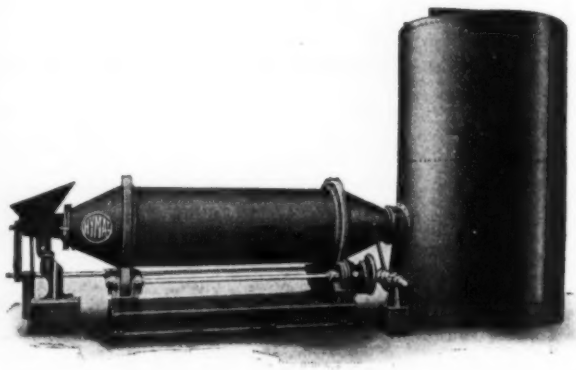
Newsprint Merger Unlikely at Present

Time-honored merger talk was again rung in to account for the recent strength of paper shares on the Montreal stock market. But in well-informed circles it is considered highly improbable that there have been any developments to warrant a revival of the talk that has been used so many times.

With respect to the St. Maurice Valley situation, the best information is that an amalgamation of news print interests in that district will come about some day, that the geography and economy of the situation will eventually overcome obstacles which have been largely of a personal nature.

As for a Spanish-Abitibi merger, such a move will meet with opposition on the part of strong shareholders of the former company. In Spanish River as it stands today, shareholders know what they have, and it is one of the attractive spots among Canadian industrials. Financially, it is the strongest of Canadian paper companies and it ranks among the foremost physically. It is said that Spanish River will most closely approximate the low cost production basis of Price Brothers when the latter company starts operating with Duke-Price power and on a considerably larger scale than at present. Spanish River shares have not been split and a merger between the two companies could be effected with justice to the Spanish shareholders only if Abitibi were prepared to make sacrifices of a nature which they are not ready to do, according to all indications.

The Canadian newsprint production for July increased by 5,812 tons over the June output to a total of 113,479 tons; while during the same month the U. S. production declined by



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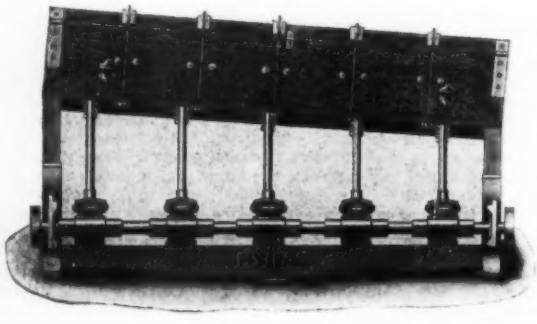

FLAT SCREENS

ONE Canadian Sulphite Mill uses 138 of our HYMAC INCLINED SCREENS (Patented). Many others are users in less degree of Flat or Inclined. We use a special Cam that is of chilled cast iron, ground to size. Its shape imparts a quick upward blast which frees the plate of foreign matter and a slow downward motion which ensures the maximum production. There are many other features that warrant investigation.

THE HYDRAULIC MACHINERY CO., LIMITED

MONTREAL, QUE.

6,771 tons to 113,952 tons. Canadian newsprint exports during the same period have increased from 95,716 tons to 105,-132 tons; while the pulp exports were only 52,232 as compared with 83,923 in July 1923.

Cheap Power a Great Asset for Price Brothers

Duke-Price Power Company recently made an issue of $12,-000,000 first mortgage, 6 percent gold bonds, due 1949, which was offered at the price of 99 and interest to yield 6.08 percent. The value of the offering was shown by the fact that it was heavily oversubscribed in a very short time.

In order to more fully appreciate the magnitude of the Duke-Price Power development, the low cost per unit of installed capacity and output, and the remarkable regulation afforded by Lake St. John as a storage reservoir, it is interesting to compare the Duke-Price Power Station with Muscle Shoals, which has received so much publicity.

The minimum discharge of the Tennessee river at the site of the Muscle Shoals development is estimated at 7,350 cubic feet per second. The unregulated flow of the Saguenay river varies between 8,000 and 200,000 cubic feet a second, with an average of 49,000 cubic feet.

The initial development at Muscle Shoals will be 100,000 horsepower, which it is planned shortly thereafter to increase to 260,000 horsepower. The initial capacity of the Duke-Price station will be 360,000 horsepower, which can be increased at small cost to 540,000 horsepower.

The cost of installing the initial development at Muscle Shoals will probably be over $60,000,000, not taking into consideration any value of water power rights. The Duke-Price Power Company shows a plant account, together with the amount of proceeds to be deposited with the trustee for the completion of the dam, of $29,700,000.

Construction was started at Muscle Shoals in 1918 and the development probably will not be in operation until 1926. Work was started at the Grande Décharge in 1923, and the power station will be in operation early in 1925.

To summarize, the Duke-Price Power Station will have over three times the capacity of Muscle Shoals during low water conditions, will cost less than one-half, and will take one-quarter the time to complete.

A contract has been made with Price Brothers and Company, Limited, for the sale of 200,000 horsepower by 1927; and an indication of the low cost can be guaged from the fact that the larger portion of this block of power will be used to replace coal for generating steam in the company's pulp and paper mills. Calculations made by the Dominion Water Power Branch, Ottawa, show that to compete with coal at $5 a ton, electrical power must be available at $6.50 per horsepower year; while with coal at $10 a ton, the equivalent price of electrical energy is $13. The price of coal at Kenogami is between these two figures.

With such a happy combination of the two principal essentials to profitable news print manufacture—cheap pulpwood and low cost of power—as will be met in the Price mills under these conditions, it seems inevitable that all records for low cost of production of news print will go by the boards when the new power development is complete.

New Pulp Mill Projected for B. C.

The Skeena Lumber Company, Limited, with a capital of half a million dollars, is now being organized to take over the assets of the Kleanza Company, Limited, lumber and mining operators at Usk, B. C.

The new company is financed by Minneapolis men and the charter they are applying for will permit them to establish a pulp and paper mill. It is claimed that the latter industry will solve all the difficulties of the company.

Paper De-inking Plant for Oshawa

The National Pulp Corporation, Limited, which will salvage waste paper by a de-inking process, converting the same into pulp for re-manufacture into the cheaper grades of paper, will erect a plant at Oshawa, about thirty-three miles east of Toronto. There was a certain amount of opposition to the agreement between the company and the municipality when it came up before the city council, but Mayor Trick stated that no person could get hurt as the city was well protected by the agreement.

The city is selling the company several acres of land for the sum of $15,000, payable in ten equal, consecutive, annual instalments of $1,500 each, without interest. The company must erect a two-story, fireproof building, 60 by 100 feet, at a cost of $75,000 and equip it with all the necessary machinery for manufacturing pulp out of waste paper. If the corporation operate and run the plant and produce an average of 20 tons of paper a day for one year, the city shall give the corporation a release or discharge of $1,500 on the mortgage indebtedness, and the city will continue to do this from year to year, provided the plant is operated and producing an average of 20 tons a paper a day during the year. The corporation has the privilege of paying off in cash the mortgage at any time during the term. The city is giving the company a fixed assessment for ten years of $25,000 for all purposes, except maintenance of schools and such other rates as the municipality has no control over.

Building of the plant must be commenced within three months after the passing of the by-law, and must be completed and in operation within twelve months from the date of the passing of the by-law.

Nobody Satisfied

There is an old saying that you cannot please everybody; but the Royal Commission on Pulpwood has succeeded in not pleasing anybody. The government had appointed the commission with the intention of making it shoulder the onus of defining a policy; but the commission quietly "passed the buck" back to the government, by stating that it "takes the view that the actual determination of a policy must rest with the government."

Those in favor of the imposition of an embargo are disappointed that this was not recommended; while the opponents of the embargo are just as much disappointed that the commission did not declare itself positively against the embargo.

It seems to be a fairly general feeling that more than $100,-000 has been paid out of the public treasury to place before the government information that it already possessed and which had long been common property.

Bay of Fundy as a Source of Power

The Moncton, N. B., Board of Trade has succeeded in arranging surveys of the Petitcodiac river, with a view to utilizing the tides as a means of power development. If the experiment is successful, local and outside capital is announced as ready to build a pulp mill and also a paper mill on the Petitcodiac.

If the Bay of Fundy tides can be harnessed, it is estimated that the cost of operation of the mills will be reduced to 25 percent of what it would be if operated with steam power. There is a rise and fall of the tides in the Bay of Fundy of from twenty-two to thirty-four feet, the highest of any body in America, and possibly in the world.

Abitibi's Affairs in Good Shape

That the Abitibi Power and Paper Company, Limited, has been able, during the first seven months of this year, to earn all its fixed charges, its preferred dividends, and the distribution on the common by a considerable margin, is a statement made by an interest close to the company. So attractive has been this margin that the company has been encouraged to make heavy inroads into its indebtedness to the banks, which was carried at an even $1,000,000 in the balance sheet for the year ended December 31st, last. This, at least, is the statement made, and while it is accepted as accurate by the source from which it comes, the management at the head office refuses to either confirm or deny the truth of the statement.

A local authority on Abitibi states, however, that this is the case. He says that earnings thus far this year have been satisfactory and have more than taken care of all requirements, including common dividend. The board has viewed the situation so favorably that they decided to reduce current liabilities by practical elimination of the item which has during the past few years been the point of much comment—bank loans. This is a favorable indication of what the company has been able to do in the first part of the current year, during which time news print was sold mostly at $75 a ton. It is not expected that the slight weakening of the paper market will materially reduce the company's earnings for the balance of the year, barring unexpected developments.

Reduced Output of Lumber Proposed

The resolution of the New Brunswick Lumbermen's Association to curtail its production of lumber 35 to 50 percent in the coming season passed at the meeting of the association in Bathurst, N. B., on July 30th, had the hearty indorsement of the twenty-two members present. The resolution is supported by lumbermen throughout New Brunswick, it is believed. The twenty-two present at the meeting represented all of the large lumber companies and many of the smaller companies.

The reduction in lumber production is considered necessary owing to the fact that a great deal of the lumber cut this sea-

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PULVERIZED FUEL SYSTEMS
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WATER TUBE BOILERS
AIR PREHEATERS
RADIAL BRICK CHIMNEYS
COAL HANDLING EQUIPMENT
ASH CONVEYORS AND HOPPERS
STEAM PIPING
SUSPENDED FLAT ARCHES
DE-AERATORS
CONDENSERS OF ALL TYPES
OIL BURNING EQUIPMENT
BOILER FEED PUMPS
PULVERIZING AND GRINDING MILLS
RECORDING INSTRUMENTS
INDUCED AND FORCED DRAFT FANS
DIESEL OIL ENGINES
ECONOMIZERS
HEAD OFFICE—TORONTO
VANCOUVER, MONTREAL, WINNIPEG

son is unsold and cannot be profitably sold owing to the high rates of government stumpage in New Brunswick, $4 as against $2.70 in Quebec, and because of the high charges for workmen's compensation. The workmen's compensation levy last year was 8 percent, to be spread over a period of three years, and the tax this year will be 4 per cent for workmen's compensation.

Lord Beaverbrook on Newsprint Cost

Lord Beaverbrook, Canadian proprietor of the London "Daily Express," believes that Canadian producers of newsprint will soon have to make a reduction in the price of their product.

"Canadian firms are getting too high a price for newsprint at present," he said in the course of a recent interview given in Montreal, while he was on a holiday trip to this country, "and the price is sure to come down. By this time next year it will not be so high as it is today."

Referring to suggestions that Canada is not receiving her due share of attention from the British press, "Misrepresentation is one thing, and proper representation is another," he said. "I am sure that the Express and other responsible London dailies deal with Canadian affairs as fully and as sympathetically as possible. If there has been anything in the nature of a malicious attack on Canada in recent months, it was by a section of the press that need not be taken too seriously."

Land Title Delays Construction

The Hollingsworth and Whitney interests are reported as ready to build a paper mill at St. Stephens, N. B., early in the spring. A start was to have been made this spring but some difficulty was experienced in securing the necessary land. The mill will be a tidewater plant, and operated by a power plant on the St. Croix River.

Boston offices of Hollinsworth and Whitney recently authorized the statement that no immediate construction may be expected at Calais, Me., and at St. Stephens, N. B. Over a year ago the company acquired considerable acreage on both sides of the river in New Brunswick and in Maine which includes valuable water power sites.

M. L. Madden and H. E. Fales, vice-president and secretary, respectively, declare that while soundings have been made in the river by the company engineers, and complete surveys made, no construction has been planned as yet. The company is engaged in clearing its titles to the land in question, which is due to the international character of the site. Negotiations are being carried on with governments of the United States and Canada, and with state and provincial governmental officials.

Lands belonging to the Fraser Pulp and Lumber Company, amounting to 280,000 acres have been acquired by the Hollingsworth and Whitney interests. These properties are largely situated in Halifax, Colchester, and the St. Mary's District of Guysboro. The company has other holdings in Nova Scotia and this last purchase will bring their acreage over half a million.

Presentation to Retiring Manager

Major J. A. Duchastel de Montrouge, who has been appointed general manager of the newly-formed Quebec Forest Industries' Association, at a salary of $15,000 a year, was presented with a grandfather's clock by the citizens of Outremont on the occasion of his retirement as city manager and engineer.

The presentation, made by Alfred Joyce, ex-mayor, and Joseph Beaubien, mayor of Outremont, took place in the City Hall in the presence of the Outremont aldermen, the mayors of neighboring cities on the Island of Montreal, and a large gathering of Outremont citizens.

Exports of the products of Northern Ontario to the United States for the first six months of this year show an increase of approximately 45 percent over those for the same period of last year. Wood pulp shows an increase of 10 percent and news print 40 percent. Pulpwood, however, fell off about 40 percent.

New Pulpwood Area Opened Up

The completion of the Interprovincial and James Bay Railway from Kipawa in the Province of Quebec, 76 miles north, to Lac des Quinze, has opened up for immediate development a tract of about 480 square miles of timber estimated to contain 1,614,000 cords of pulpwood, in addition to considerable quantities of hardwood.

According to the reports of the Canadian Pacific Railway, which owns the Interprovincial and James Bay Railway, and which is offering these timberlands for sale, about 75 per cent of the whole area is within the limit of a two mile haul to drivable streams, the average haul on the remaining 25 per cent being about three and a half to four miles. Logs can easily be floated to Lac des Quinze and the Des Quinze River from the areas referred to, which are close to Lake Abitibi. Ample power is available for milling. The Interprovincial and James Bay Railway runs east of Lake Temiscamingue and west and north of Lake Kipawa.

At the forty-first annual assembly of the Sovereign Great Priory of Canada, Knights Templar, which was held at Windsor, Ont., early in August, Charles F. Mansell, of the Howard Smith Paper Mills' sales staff, Toronto, was re-elected Grand Treasurer, which position he has filled for sixteen years. Mr. Mansell is one of the veteran paper representatives of Canada.

A notice has appeared in the Ontario Gazette to the effect that the charter of the Great Lakes Paper Company, Fort William, Ont., has been amended so that the capital of the company of $8,000,000 shall consist of 80,000 shares of $100 each, of which 5,000 shares shall be class "A" preference shares, 15,000 shares will be class "B" preference shares, and 6,000 share shall be common shares.

Pulp Mill Rumored for Fredericton

Reports that United States capital intend to build a modern pulp and paper mill in or near Fredericton, N. B., have been stimulated by the presence of S. T. Murchie in eastern Canada. Mr. Murchie has been living in Aurora, Ill., for some years, but for most of his life resided in Massachusetts where he was executive for several pulp and paper companies. He was born near St. Stephens, N. B., but went to Massachusetts when in his early twenties, whence he was sent to Germany to study German paper manufacturing methods.

He is the inventor of the square-bottomed bag, commonly known as "grocer's bag," and of other paper novelties. While in Fredericton he was the guest of his brother, A. T. Murchie, chief scaler of the department of land and mines of the New Brunswick government.

There have been persistent reports that a syndicate of United States pulp and paper men would build a pulp and paper mill at or near Fredericton. The visit of Mr. Murchie, who made the trip by motor car from Illinois, is believed to be in connection with the new scheme for pulp and paper manufacturing on the St. John River.

Carthage Machine Has Started Manufacturing at Belleville

The Carthage Machine Company of Canada, Limited, which decided a few weeks ago to locate in Belleville, Ont., has already entered upon the manufacture of several lines of its products in the plant acquired from J. C. Wilson & Co.

The company, which is a subsidiary of the Carthage Machine Co., of Carthage, N. Y., is engaged in the manufacture of machinery used in the making of pulp and paper, an absolutely new line of manufacture for Belleville and one that will become increasingly important. A commodious general office has been provided in the brick dwelling on the western

part of the property. This will be occupied by the General Manager, F. S. Wilson and his office staff.

B. C. Root, Canadian sales manager, and Mrs. Root, will take up their permanent residence in Belleville in the near future.

It is believed that the fiscal year of Laurentide Company, Limited, which closed on June 30th, was a good one. While no semi-official forecasts are yet available, it is understood that the showing will be somewhat better than that for the 1923 period, when 6.9 percent was earned on the capital stock. Unofficial estimates of 1924 earnings run all the way from 7 to 12 percent.

Congress of Pulp and Paper Mill Workers

A resolution urging the federal government to adopt legislation limiting to eight hours a day or forty-eight hours a week work in pulp and paper mills was the most important stand taken by the delegates to the Congress of Pulp and Paper Industries Workers of Canada, which was held at Port Alfred, Que., on August 1st.

This was the first congress of the representatives of the thousands of pulp and paper workers who are mostly members of the Catholic unions, and delegates were present from all pulp and paper centers, including Hull, Chicoutimi, Val Jalbert, Desbiens Mills, and other points. Pierre Beaule presided over the meetings of the congress.

Working on Combatting Forest Diseases

Prof. J. H. Faull, of the Department of Forestry of the University of Toronto, speaking before the British Association for the Advancement of Science, which met recently in Toronto, said that forests are attacked by a multiplicity of diseases, the causes of which are unknown. Methods have been developed for coping with diseases afflicting white pine and pulpwood, he said. Huge quantities of timber, prematurely diseased following on injuries from fires have been left unharvested, and the amount at present considered unfit for use amounts to fifty per cent in certain areas. Experiments are being pushed which aim to make this timber available, and it is likely that such losses will be avoided, at least in part.

A party of botanists visited Prof. Faull's laboratory at Bear Island during their botanical expedition in Timagami, and saw how he had succeeded in producing diseases in trees by a method of inoculation.

St. Regis Buys More Land

Further evidence of the decision of the St. Regis Pulp Company to build a mill at Cap Rouge, eight miles west of Quebec City, is found in the fact that the company has completed the purchase of lands, for the sum of $70,000, and within a few days more is expected to take over nearly as much again. Two large farms of 33 acres each are included in the deal. Ample accommodation is provided for quarters for the 800 men expected to find employment after the three mills have been built, as well as suitable ground sites for the mills.

Judging by the fact that the representatives of the company have requested the former owners to move from the land by the 1st of January next, it is thought that construction of the mills will start at that time.

Concurrent with the announcement come further reports of a coming merger or working agreement between Price Brothers and the St. Regis Company.

Members of the British Association for the Advancement of Science made a trip through Northern Ontario after their Toronto meeting. On Tuesday, August 19, they visited Iroquois Falls and made a tour of the big newsprint mill of the Abitibi Power and Paper Co.

Paper Train Derailed

Twelve cars of pulpwood and sulphite, part of the heavy 61-car paper train of the Temiskaming and Northern Ontario Railway from Iroquois Falls to North Bay, Ont., went into the Krugersdorf river on August 15th. The engine and 31 cars passed safely over the bridge, but the next ten cars went over. The next four were derailed, but remained on the high trestle, while the other cars held to the rails.

Early examination shows that something had been trailing for about ten car lengths before the train reached the bridge, and it is believed the wreck is due to a broken truck. It is believed all the freight will be safely salvaged. No one was injured in the wreck.

World's Record for Newsprint Production

A new world's record for newsprint production has been established on the latest Dominion Engineering machine at Kenora, Ont., which, on Saturday, August 9, produced 110.72 tons in one day of twenty-four hours.

The machine, which is driven by a Harland electric drive, was running at 750 feet per minute. The trim was 219 inches of newsprint of a basis weight 24 x 36 x 34, and the total lost time was fourteen minutes, of which ten minutes was for shut down at 7:50 a. m., Sunday, and four minutes for a broken control belt on the calender drive. During the entire twenty-three hours and fifty minutes the paper did not break on the machine, and the efficiency, based on twenty-four hours' operation, was 99.1 per cent.

This performance with a new machine reflects great credit on the superintendent, McWalter Shaffer, and his staff. This record will no doubt be improved upon in the near future, as the speed is gradually being built up. The machine was started at 600 feet, and the record was made on the first day that it attained the speed of 750 feet.

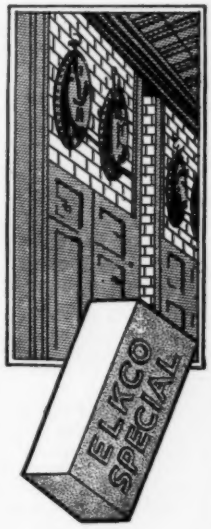
Grave Trouble Averted at Cornerbrook

Four thousand workmen, employees of the Newfoundland Power and Paper Co., on construction work at Cornerbrook Bay, Newfoundland, went on strike at the end of July. They demanded a wage increase of 10 percent, and, on being refused, they walked out. For some time serious trouble was feared, as the leaders threatened to destroy both the plant under construction and the surrounding forests. Fortunately, they were prevailed upon to return to work pending a prompt investigation of their grievances by the government.

A check-up of employees showed that more than five hundred men had left the settlement while the strike was in progress and had returned to their homes in other parts of Newfoundland.

Hon. James Lyons, Minister of Lands and Forests for Ontario, recently went to British Columbia gathering information on conservation and making a survey of the forests in that province. In return, Mr. Lyons outlined to the Forestry Department of British Columbia the success which has been attained in Ontario with the newly created air survey plan. British Columbia is adopting the aeroplane protective system, and practical information from Ontario was requested.

Fire Brick and Fire Clay



The making of pulp and paper is not accomplished under conditions common to all. They vary greatly. The fire brick that would suit one condition or equipment might fail in another. There is as great a difference in fire brick clays and processing as there is in the selection and processing of raw material in the paper industry.

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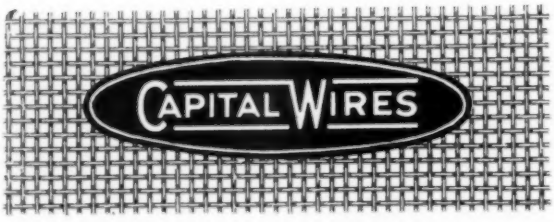


CAPITAL WIRE CLOTH & MANUFACTURING CO., LTD.
OTTAWA, CANADA

Labor Troubles at Crabtree

The decision of the men employed by the Howard Smith Paper Mills, Limited, at the Crabtree mill, near Joliette, P. Q., to organize and join the International union was the cause of a lockout at the beginning of August. The men immediately telegraphed to Honorable James Murdoch, Minister of Labor at Ottawa, who sent Messrs. T. Bertrand and M. Quirk to investigate. After they had obtained all the necessary information to size up the situation, the representatives of the Minister of Labor called a meeting at which the questions at issue were thoroughly thrashed out between the men and officials of the company.

The following points were agreed upon:

The men are at liberty to organize into a union; but the company does not recognize the union;

All the employees are taken back in their former capacities;

There is an all-around reduction of 10 per cent in salaries (the company had announced cuts ranging from 10 to 15 per cent), but the minimum for common laborers is to be 25c an hour (some men were receiving only 23c).

The men declare themselves satisfied with these conditions.

Belgo-Canadian Paper in Good Condition

Belgo-Canadian Paper completed a full year under its new administration on June 30. No financial statement is being issued for that period, as the company's fiscal year is to end December 31, so it will report to shareholders early next year on the operations covering the period July 1, 1923 to December 31, 1924.

It is understood that for the first twelve months under the new regime the company earned 18 per cent on its common stock after providing for bond interest, depreciation, sinking fund, and preferred dividends. Such a showing speaks extremely well for this St. Maurice Valley producer, which is not quite so much in the limelight as some other newsprint companies.

The directors of the Provincial Paper Mills, Limited, paid a visit of inspection to the Port Arthur mill of the company early last month, and looked over the property quite thoroughly. The party included R. S. Waldi, S. F. Duncan, L. H. Weldon, A. B. Munro and F. Connable.

Whalen Reorganizing

A determined effort is being made by interests representing bond and debenture control of Whalen Pulp and Paper Mills, Limited, Vancouver, B. C., to bring about a full and complete capital reorganization of the enterprise. Bondholders are being asked to deposit holdings to expedite proceedings.

Excellent progress is reported to have been made in re-establishing and extending the sales of the company, which were seriously affected by the Japanese earthquake and by the general credit condition of the company.

Oppose Riordon Sale

Corroboration of the announcement that the Retail Merchants' Association of Canada would strongly oppose the sale of the Riordon Pulp and Paper Company's assets, dated to take place September 8th, was made by E. N. Trowern, secretary of Dominion Board of the Association.

Mr. Trowern stated that among the unsecured creditors of the Riordon Company were a large number of members of the Retail Merchants' Association, many of them very heavy creditors, and it was felt by them that the sale of the assets would prove prejudicial to their interests. They could see no reason for the bondholders taking possession of the property and cutting out the creditors, as appeared to be the present intention.

Efficient Operation Offsets Price Reductions

It is stated on good authority that net profits of prominent news print producers at $73 per ton are fully equal to, if not in excess of, profits on $75 news print a year ago.

Economies are now effective in connection with fuel costs as well as in other items.

A. M. Moffat, of Gardiner, Ont., sixteen miles north of Cochrane, who is well known in pulpwood circles, was in Toronto recently on business. Mr. Moffat is undertaking colonization work in and around Gardiner and during the past few months his efforts have resulted in locating thirty-five settlers, chiefly from the older parts of Ontario and Quebec, whom he reports as well pleased with their prospects. They are erecting homes and taking out considerable quantities of pulpwood.

Twenty Thousand Cords of Pulpwood Burned

A fire which broke out on August 23 in two huge piles of pulpwood belonging to the Brown Company, at Isle Verte, Temiscouata County, P. Q., died down four days later after having consumed 20,000 cords of pulpwood, valued at $250,000.

The fire broke out at the mill through some defect in the boilers, and before any steps could be taken to prevent its extension it destroyed the mill and then started to creep through the pulpwood outside. The destroyed mill was to be closed in a few days, so that as far as employment is concerned the fire will not have much effect. The losses are covered by insurance.

To Investigate Swedish Paper Industry

Alfred P. Taylor, president of the Combustion Engineering Company, Toronto, who has been in England attending the world power conference and investigating the latest development in power plant design, has been appointed to conduct an extensive investigation throughout the pulp and paper industry of Sweden and Finland, with special reference to the economical use of steam.

Mr. Taylor will go from Sweden to Germany and is not expected back in Toronto for several weeks. He will devote a good deal of time to the Ruths accumulator and also the methods used in Sweden for the drying of wood refuse, a new form of dryer having been recently developed, using waste gases from the boiler plant.

Rossing Plant Burned

The planing mill and rossing plant belonging to Knight Brothers and McKinnon, Cobalt, and located at Kenogami, five miles north of Swastika, Ont., Temiscamingue district, was recently destroyed by fire.

The loss is estimated at $25,000 and is partially covered by insurance. The rossing plant had been in operation all winter, but the planing mill had just started up, only two cars of lumber having been shipped from the yard.

Site Chosen for New Price Mill

Price Brothers & Company will start work shortly on the erection of a new pulp mill at St. Joseph d'Alma, Que. On July 5th the company wrote the municipality asking permission to build the mill, and a short time ago this permission was granted and accepted by the company. It is expected about five or six hundred men will be employed at the beginning, and that the number will be augmented as the need arises.

The work will not be completed until January, 1926, by which time it is expected the mill will be ready to produce 200 tons of news print a day, and this amount will be gradually increased until in 1929 the daily production will amount to 400 tons.

The mill will be built directly opposite the village of St. Joseph d'Alma, on the bank of the river.

Brock Richardson, of Grand' Mère, Que., who has been employed by the Menjobagues Lumber Company, Lake Menjobagues, Que., for some time past, expects to leave early in September for Newfoundland, where he has taken a position with the Newfoundland Power and Paper Company.

F. M. Oliphant, of the British Empire Research Station, in London, recently was the guest of Ellwood Wilson at Grand' Mère. He was particularly interested in the forestry work of the Laurentide Company.

Chicoutimi Pulp Mill Resumes Operations

After months of unemployment, some six hundred men, formerly working for the Chicoutimi Pulp and Paper Company, at Chicoutimi, Que., returned to work a few days ago, when the mills of the company were reopened after a shutdown which lasted since last February.

The output will be forwarded to England, where interests have entered into a contract with the Canadian concern. There are unconfirmed reports that Price Brothers and J. E. A. Dubuc are the parties responsible for the resumption of operations, and it is added that the operations will be permanent.

The mills were shut down and the company went into the receiver's hands subsequent to the failure of the Becker Company of London, England.

H. F. Bullard, formerly purchasing agent for the Laurentide Company, and now of Dryden, Ont., and J. S. Wilson, of Drydem, recently paid a visit to Grand' Mère, Que.

Splendid Year for St. Lawrence Paper

The annual report of the St. Lawrence Paper Mills, Limited, Montreal, whose mill is located at Three-Rivers, P. Q., and of which N. A. Timmins is president, is being issued on the completion of its first year of operation, and at the annual meeting, which will be held shortly, will be presented to the shareholders. The financial year terminated on June 30.

It is learned that the company had a very satisfactory twelve months, and the bond interest has been earned several times over, while a liberal allowance has been made for depreciation. This is considered a satisfactory showing considering the somewhat unsettled conditions which have developed within the past few months in the newsprint market.

In view of the excellent showing made, and as the company desires to get disbursements on the preferred stock started as early as possible, it is thought an initial payment on account of the arrear of dividends will be made shortly.

St. Regis Breaks Ground for New Mill

The St. Regis Pulp and Paper Company will break ground at Cap Rouge, a few miles from Quebec, about October 1, for the building of extensive mill properties which had been decided upon a year ago. The company has purchased the land for the site of its new mills. More land will be acquired to provide for quarters for the 800 men who will be employed after the three mills have been built.

The company intends to restrict operations in the United States and will sell its power to other plants. In the meantime they will purchase the power for their Cap Rouge mills from the Quebec Power Company, a subsidiary of the Shawinigan Water and Power Company. The mill will require between 14,000 and 15,000 horsepower.

Backus Visits Port Arthur and Fort William

E. W. Backus, head of the Fort Frances Pulp and Paper Company, accompanied by a number of leading financial and business men, recently paid a visit to Port Arthur and Fort William, Ont., where they were tendered a reception and visited the new pulp mill of the Great Lakes Paper Company and other industries in the pulp and paper line.

It is understood that proceedings are under way to erect in the near future a newsprint mill in connection with the activities of the Great Lakes Company.

S. J. Robinson, of Auckland, New Zealand, who is a director of B. J. Ball, Limited, wholesale paper dealers, of Sydney, Australia, and Auckland, N. Z., has been calling on the Canadian trade and making arrangements to handle a number of lines of Canadian papers in the Antipodes.

W. E. Knight, United States agent for the Consolidated Mines of Cornwall, whose headquarters are at Long Branch, N. J., called on the paper users of China clay at Toronto, a short while ago.

George Carruthers Bereaved

THE PAPER INDUSTRY offers its deep-felt sympathy to Mr. George Carruthers, president of the Interlake Tissue Mills, Ltd., and president of the Canadian Pulp and Paper Association, in the loss which he has sustained by the death of his mother, who died last month at the age of seventy-six, at Avening, Ont.

New Pulp Company Formed in N. B.

Fraser-Gaspé, Limited, Plaster Rock, N. B., is a new concern recently formed with a capital of $100,000 to conduct a general lumber and pulp manufacturing business. Among the incorporators are Archibald Fraser, of Fredericton, Donald Fraser, of Plaster Rock, William Matheson and A. W. Brebner of Edmundston and Thomas Matheson of Estcaust, Que.

A report is current that the company will eventually build a pulp mill on the Escuminac river, and will develop the hydro-electric possibilities of the territory.

American Capital for Great Lakes Company

J. H. Black, president of the Great Lakes Pulp and Paper Company, Limited, Fort William, recently stated that financing for the proposed new newsprint mill which the company will build in connection with their present pulp plant was not yet completed, but that an announcement to this effect might be forthcoming any day. It is thought that the entire capital will be furnished by Americans.

Mr. Black stated that the company's groundwood mill at Fort William was busy and operating steadily with an output of 125 tons a day. A considerable portion of this is going

Aught or Naught?

—and the engineer said:

"The old pump is done for, boss—we'll have to have a new one."

When you face the prospect of putting in a new pump, what does the record of your old pump mean to you—aught or naught? When your pump has given you years of service plus —the record of its builder is good. Our history stands for you to read.

SMART-TURNER Horizontally Split-Shell Centrifugal Pump

is a production we are proud to put our name plate on. Years and years from now you will be satisfied with your judgment in putting one of these sturdy pumps for regular hard duty in your factory or works.

S-T-M PRODUCTS:
Steel Barrels, Centrifugal Pumps [Belt or Motor Driven]
Power Pumps, Steam
Pumps, Pump Accessories
Air Compressors.

SMART-TURNER MACHINE CO., Ltd.

Hamilton, Ontario

REPRESENTATIVES: Vancouver, Calgary, Edmonton, Winnipeg, Toronto, Ottawa, Montreal, St. John, Halifax.

to the Fort Francis Pulp and Paper Company's mill at Fort Francis, Ont., to keep the newsprint mill going, as the latter is experiencing considerable difficulty on account of power shortage.

International Paper Officers in Canada

The presence of A. R. Graustein, president of International Paper Company, in Montreal recently set rumors going respecting possible developments between that corporation and certain holdings of the Riordon Company, that have been offered for sale.

The chief engineer of International was also in this country recently, and it is understood that he was looking after materials for the company's new news print mills. The site of the latter has not been announced, and it is thought that the delay is being occasioned by the imminence of the sale of the Riordon properties, as it is expected that International will get some of the latter holdings.

Novel Attire in Elks' Parade

At the recent convention of Elks in Edmonton one of the delegates was T. H. Wilkes of the Abitibi Power and Paper Company, Iroquois Falls, Ont., who created quite a sensation in the big parade in his paper suit.

In the procession was a fourteen foot high cardboard horse which stated that Iroquois Falls was a fine place. Mr. Wilkes by a fluttering paper suit drew attention to the fact that Iroquois Falls was a paper making town. He made the garb out of paper, using purple and white, the colors of the Elks. Using a canvas suit as a base, he fastened the paper to the suit, afterwards cutting it into ribbons.

The Belleville Paper Mills at Cannifton, which closed down a short time ago, have resumed operations. Mr. Porritt, the manager, states that the mill is busy working up all the raw material around the plant and the expectation is that the mill will carry on as usual.

Mr. O'Neill, purchasing agent for the E. B. Eddy Company, Limited, Hull, Que., has returned from a trip to various industrial centers in connection with the placing of orders for the equipment for the new sulphite plant which the company is erecting and on which good progress is being made.

Paper Mill Still Closed

The pulp mill of the Bathurst Company, at Bathurst, N. B., remains idle. The expectation now is that the reopening will not take place until September, or even later. The company's warehouses were well stocked when the mill shut down, and this pulp is now being shipped to customers and utilized in the company's own paper mill at Bathurst.

Practically all of the eastern Canadian pulp mills are being operated, with the exception of the Bathurst Company's mill. In some instances the plants are working only three or four days a week; but in most instances there is full time operation. At present the plants are not contemplating any shutdowns, the general belief being that improvement in the pulp market will be exhibited before the beginning of the winter.

Provincial Paper's Business Good

N. E. Wainwright, of the Provincial Paper Mills, Limited, on his return to Toronto from a business trip to Winnipeg, reported a much better tone to business in the west and considerable optimism as to the future.

The Provincial Paper Mills report that they are doing a good export business with New Zealand, and that they are also shipping some paper to Australia despite the 10 percent adverse tariff and the exchange situation.

Improvements at Horton Steel Works' Plant

The Horton Steel Works, Limited, Bridgeburg, Ont., are improving their plant, so as to make it one of the most complete and up-to-date in Canada for the fabrication of tanks and steel plates.

The specialties of these works are elevated steel tanks for municipal, sprinkler, railroad and general service, and for hydraulic pipe line surge tanks. Its pulp digesters and barking drums have become well known in paper mills.

The Smith Foundry Company, of Fredericton, N. B., have recently shipped their widely-known "J & C" rossers to a large number of firms, among them being the Fraser Companies, Limited, at Edmundston, N. B., and Chatham, N. B.; Howard Smith Paper Mills, Gaspé, Que.; Lincoln Mills, Limited, Cascapedia, Que.; M. J. Mooney, Harbor Depot, Nfld.; and British-American Trading Corporation, Sorel, Que.

Canadian Realty Avoids Liquidation

A meeting of creditors of Canadian Realty Co., Limited, a pulpwood company with head office in Fredericton, N. B., was held recently; and as a result, Charles E. Clowes, president of the company and representative of a committee of the creditors of the company, has gone to New York to interview the International Paper Co., in an attempt to secure a new contract for pulpwood.

Assets were placed at $33,000, of which $8,000 is real estate. Liabilities were reported at $175,000 to the International Paper Company and $75,000 to sellers of pulpwood, of which $46,000 is owed in New Brunswick. The indebtedness to International Paper has been reduced by $10,000 on pulpwood shipments.

Back Home, and Glad of It

David Brown, of the J. L. Morrison Co., recently returned from his three months' visit to Europe. He, of course, visited Wembley, and says that he viewed the Canadian Building with much pride. It is the only building not commercialized, and he claims it is one big "Silent Salesman" benefiting Canada to a great extent.

He was much surprised and rather disappointed at not locating a Canadian printing exhibit. He feels that an opportunity has been lost in not having such an exhibit.

Mr. and Mrs. Brown also had a most enjoyable visit to France; but in spite of their very pleasant trip they feel that "the best of going away is getting home," and Canada, in their eyes, is the greatest country in the world.

Wembley Buildings Covered with Ruberoid Roofing

One of the largest, if not the largest, contracts for roofing ever recorded in the history of construction was awarded the London, England, branch of the Ruberoid Company, Limited, for the roofing of the buildings of the British Empire Exhibition at Wembley. Protection of the beautiful buildings which house the exhibits involved the use of more than sixty-five miles of Ruberoid roofing three feet wide.

To cover the Canadian Pavilion alone required 11,000 square yards of Ruberoid, which was manufactured in the Montreal factory of the Ruberoid Company.

The Buntin Reid Company, Limited, Toronto, have obtained the Canadian agency for Dixotype Dry Flong and will carry a stock in Toronto for distribution to the newspapers, stereotypers and matrix makers. The product is manufactured by L. S. Dixon & Sons, Liverpool, England.

In order that they might better serve their Canadian patrons, Bertha-Consumers Company have decided to place practically the entire Canadian territory under the jurisdiction of J. W. MacMahon, Room No. 11, 425 Phillips Place, Montreal.

The annual picnic of the employees of the Interlake Tissue Mills, Limited, Merritton, Ont., was held in the first week of August at Grimsby Beach. The event was largely attended and a most interesting time was spent in games and sports.

A large aerodrome and machine shop will be built at Sault Ste. Marie, Ont., for the wintering of the Ontario air fleet of the Ontario Forestry Department, consisting of fourteen planes from the Soo and Sudbury districts.

J. W. Thompson, superintendent of stores at the Bathurst Co., Ltd., Bathurst, N. B., was bereaved of his wife by electric shock. Mrs. Thompson had been connecting an electric iron, and apparently her hands were wet.

George H. Mead, of Dayton, Ohio, president of the Spanish River Pulp and Paper Mills, Limited, who has been ill the greater part of the summer, is now completely restored to health and is spending some time on the Maine Coast.

P. R. Faulkner, of Montreal, has been added to the sales staff of the Montreal office of the Interlake Tissue Mills, Limited. Mr. Faulkner spent some days at the head office in Toronto getting on familiar terms with the job.

The E. B. Eddy Company, Limited, of Hull, Quebec, has purchased as part of its equipment for its new boiler house three 9-retort type "H" Taylor stokers. These stokers are manufactured by the American Engineering Company, Philadelphia.

Laurentide Sales Office Moves to Montreal

The Laurentide Company announces the removal of its sales office from Grand 'Mère, P. Q., to Montreal. For some time E. L. Crooker, the sales manager of Laurentide, has spent much of his time in Montreal, where he has his residence.

The Laurentide office will be located in the Canadian Cement Building, where the Canadian Export Paper Company offices are located. The only member of the Laurentide sales staff affected by this new order is S. H. Smith, who has already moved to Montreal. William Fowler will remain in Grand 'Mère for the present as the sales department's representative there.

Crabtree & McKay, Limited, 142 Weston Road, Toronto, manufacturers of corrugated paper, have recently become a chartered company, with an authorized capital of $40,000 and have taken over the business of Crabtree & McKay.

Paper Mill Worker Killed

Maxwell Bryant, 22, died of injuries received when a roll of paper fell on him at the Port Arthur mill of the Provincial Paper Mills, Limited.

He leaves a widow and one child. He came here from New Zealand.

Large Timber Sales in Ontario

At the end of July the Ontario government invited tenders for the right to cut timber in four townships, each thirty-six square miles in area, which are estimated to contain 100,000,000 feet of pine, 28,000,000 feet of jack pine, and half a million cords of pulpwood.

The sale realized about $2,000,000; and the government is now advertising more limits for sale, with a total area of 171 square miles. It is hoped to get additional revenue of over $3,500,000 from the province's timber industry during the next five years.

Toronto Paper to Redeem Bonds

The Toronto Paper Manufacturing Company have given notice of the redemption of the 6 percent, thirty year, first mortgage, sinking fund, gold bonds which were issued under a deed of trust and mortgage in favor of the Royal Trust Company of Montreal, in August, 1912.

The bonds will be redeemed by the company on September 2 by paying to the bondholders the amount of the semi-annual interest coupon due September 1, together with the sum of $110 for each $100 par value of such bonds. The bonds will cease to bear interest after September 1.

New Bark Press

Realizing the great economic loss involved in throwing away the bark taken from the logs prior to pulping, several of the large pulp and paper manufacturers of Ontario are taking an interest in a new machine manufactured by the Northern Foundry, of Sault Ste. Marie, Ont., which treats the bark to render it available as fuel.

The machine was given a thorough test, lately, in the presence of H. J. Buncke, chief engineer of the Abitibi Power and Paper Co., Iroquois Falls. The company has shown great interest in the experiment and will purchase the first machine.

Fire Checked by Paper Men

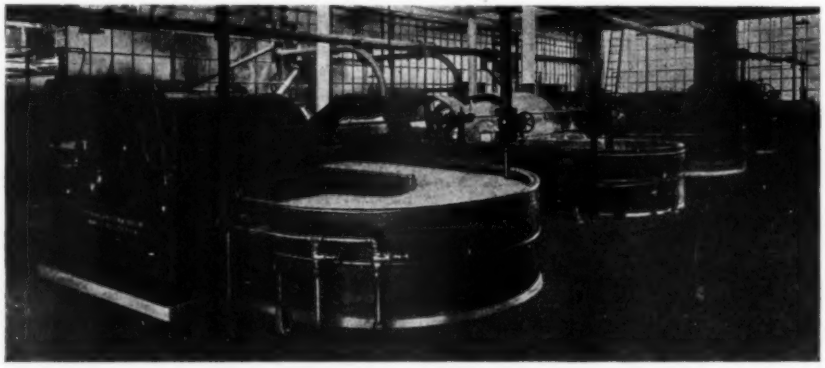
An acre of hay belonging to Joseph Kilgour, of Kilgour Brothers, paper box manufacturers, Toronto, Ont., caught fire on his model farm at Eglinton, near Toronto.

The Toronto city fire department was unavailable as the farm was outside the city limits, and the employees of the firm's factory on Wellington Street were rushed to the scene in motor trucks and helped materially to keep the loss down to a minimum. They had to beat out the flames, as there was no water supply handy for fire-fighting purposes.

Successful Safety Work in New Brunswick

Much success has attended the efforts of the pulp and paper executives in New Brunswick to reduce compensation liability. Booklets have been sent to each mill and to pulpwood operators as well by the newly organized New Brunswick Lunberman's Safety Association, with which are affiliated the pulp and paper interests of the province.

The association has been mailing a regular bulletin of advice on how to reduce the number of accidents and impressing on employees the need of care in working about machinery. A constitution was drawn up at a recent meeting in St. John.



AN INVESTMENT in our beater room equipment means better beaters and Jordans. Our machinery embraces the most approved and advanced designs, together with heavier construction and the most careful workmanship.

The Noble & Wood Machine Co., Hoosick Falls, N.Y.

Canadian Builders: Port Arthur Shipbuilding Co., Ltd.
PORT ARTHUR, ONTARIO

Drowning Near Kenogami

A very sad accident occurred at Grande Baie, near Kenogami, Que., in which Miss Marjorie Duncan, of Bathurst, N. B., a niece of Mr. A. A. McDiarmid, chief engineer of Price Brothers, lost her life, and John McCaw, a young man of Price Brothers' staff sacrificed his life in an attempt to save her.

The young lady was one of a party in bathing, who went too far to the edge of a sand bar when suddenly the loose sand gave way into deep water.

New Agents for French Dye Firm

The Societé Anonyme des Matières Colorantes et Produits Chemiques de Saint Denis have announced that Messrs. F. E. Cornell and Co., who have been for many years their Canadian representatives, have found it impossible to continue as their agents on account of increasing volume of trade in other lines.

They have appointed Messrs. Prescott and Company, of 234 Beaver Hall Hill, Montreal, their sole agents for the sale of aniline dyes and intermediates.

Veteran Paper Maker on the Job

One of the oldest paper manufacturers in Canada is J. H. McNairn, of 7 Jarvis St., Toronto. He is 87 years old, and goes to work every day.

He recalls many interesting reminiscences in connection with the business and settlement of the country. He had the experience of going down the rapids of the St. Lawrence river on the first steamer that ever made the run.

Returns to Finland

Relf Willen, of the Clyde and Sissiboo Pulp and Paper Company, who has been attached to the Weymouth mill for some time, has returned to his home in Finland. He was accompanied by his wife, passage having been taken to London from Halifax. Mr. Willen came directly to the Clyde and Sissiboo Pulp and Paper Company from Finland, where he had been employed in a pulp and paper mill.

E. J. Bristow, of the Buntin Reid Company, Toronto, is back at his work after having been ill for a few weeks.

Foresters Killed in Plane Crash

Kenneth MacBride and Victor Gilbert were killed and R. C. Burton was badly hurt when their plane slipped into an air pocket above Lac des Mille Iles and nose-dived to the ground near the lake. The plane was driven by Burton who was in search of another plane lost somewhere in the district. He was about to land at Savanne, a fuel station for the air service, when the accident occurred.

The Hind & Dauch Paper Mills, Toronto, were closed down for a few days in the latter part of July owing to a breakage in one of the machines. The repairs were quickly made, and the mill was soon running steadily again.

Visitors at Iroquois Falls

The booming paper town of Iroquois Falls, Ont., was visited recently by nearly a hundred members of the Quebec City Board of Trade, who were much impressed both by the beauty of the place and by the hugeness of the mill of the Abitibi Power and Paper Company and its operations.

Lord Byng, Governor General of Canada, and Lady Byng, paid a visit to the town on August 29th, and were tendered a civic reception.

Abitibi Appointment

L. R. Wilson has been elected vice-president of the Abitibi Power and Paper Company, and W. H. Smith, who has for a number of years been treasurer of the company, has been officially appointed to the office of secretary of the organization and will now have the title of secretary-treasurer.

Arrangements are now under way for the erection at Iroquois Falls, Ont., of a memorial to the former president of the company, the late F. H. Anson.

The Interlake Tissue Mills Company, Limited, of Merritton, Ont., made a very creditable exhibit at the recent Canadian National Exhibition, which was held in Toronto.

G. Meerbergen, of the Newfoundland Power and Paper Co., Montreal, recently paid a visit to Grand' Mère.

Water Power in the Canada Pulp and Paper Industry*

AS IT takes practically one hundred horsepower to make one ton of paper per day, the indispensability of an abundant supply of low-priced power is apparent. In any industry the relative necessity of obtaining cheap and adequate power may be gaged by the amount required per dollar value of product, and, with the possible exception of certain electrochemical and metallurgical processes, the requirements for the manufacture of pulp and paper rank among the highest. It is therefore little surprising that over 90 per cent of the motive power in this industry is derived from the energy of waterfalls.

HYDRAULIC POWER IN CANADIAN PULP AND PAPER MILLS

Province	No. of Mills	Turbine Installation in the Industry: Direct Drive, Hp.	Turbine Installation in the Industry: Hydro-Electric Drive, Hp.	Total, Hp.	Purchased Hydro-Electric Power Hp.	Total Hydro-Electric, Hp.	Total From All Sources, Hp.
British Columbia	5	26,790	28,350	55,140	.....	28,350	55,140
Ontario	46	89,066	85,123	174,189	96,985	182,108	271,174
Quebec	56	151,792	85,440	237,232	131,120	216,560	368,352
New Brunswick	4	2,668	11,060	13,728	650	11,710	14,378
Nova Scotia	10	17,251	80	17,331	.....	80	17,331
Total	121	287,567	210,053	497,620	228,755	438,808	726,375

While the average consumption of power for the conversion of pulpwood into paper is 2,400 hp. per ton per day, one large Canadian mill uses 1,750 hp. for each ton of mechanical pulp produced, 1,600 hp.-hr. of which is for the actual grinding alone. The production of sulphite pulp for mixing with the ground wood pulp requires 209 hp. per ton of daily output (in other large mills as high as 720 hp. was used per ton of sulphite pulp produced), while the conversion of the pulp to newsprint required 288 hp. for the same unit of output.

The continuous operation of mills in this industry, usually 24 hours a day, lends itself to the securing of a very low cost per unit of power used, as the main cost item is the interest on the capital expended in the hydraulic development, and this remains constant whether the plant operates ten hours a day or twenty-four. The development of the electric steam generator has become an added factor in reducing this unit cost, in that any surplus or off-peak power that may be available can be utilized for producing steam for pulp cooking, drying, heating and similar uses.

At the present time the hydraulic power utilized in the pulp and paper industry totals to 726,375 hp., and the rapidly growing change to electric drive is shown by the fact that 438,708 hp., or over 60 per cent of this total, is converted into electricity before use. Of this latter total 210,755 hp. is purchased from central electric stations. The last completed census conducted by the Dominion Bureau of Statistics, that for the year 1922, shows a steampower installation in pulp and paper mills of only 60,764 hp. or less than 10 per cent of the total installation.

Quebec has 56 mills powered by 368,352 hp. of hydraulic or hydro-electric energy. Of this, 151,792 hp. is direct-connected to pulp and paper machines, 85,440 is connected to generators and 131,120 hp. represents power purchased from central stations. Of this purchased power the nine mills that generate no hydraulic power purchase 88.385 hp., the rest 42,735 hp. being additional power purchased by generating mills. The total daily producing capacity of these mills is some 3.000 tons of mechanical pulp, 1,500 tons of chemical pulp, 1,400 tons of newsprint and 740 tons of other kinds of paper.

Ontario has 46 mills requiring a total of 271,174 hp.; of this amount 174,189 hp., made up of 89,066 hp. direct connected to generators, is installed in the plants of the pulp and paper organizations, while 96,985 hp. is purchased from central electric stations. The total daily production of the mills in this province aggregates 2,200 tons of mechanical pulp, 1,800 tons of chemical pulp, 1,900 tons of newsprint and 735 tons of other kinds of paper.

British Columbia, with only five mills, has a total installation of 55,140 hp., of which 26.790 hp. is direct-connected to pulp and paper machines and 28,350 hp. is converted to electricity before use. None of these mills finds it necessary to supplement its own installation by purchased power. The two large mills at Ocean Falls and Powell River have installations of 26,850 hp. and 24.000 hp. respectively. The combined daily production of the mills in this province reaches some 390 tons of mechanical, 430 tons of chemical pulp, 445 tons of newsprint and 30 tons of other paper.

New Brunswick has only four mills operated by water power, with a total installation of 13,728 hp. and a daily producing capacity of 30 tons of mechanical, 300 tons of chemical pulp and 50 tons newsprint paper.

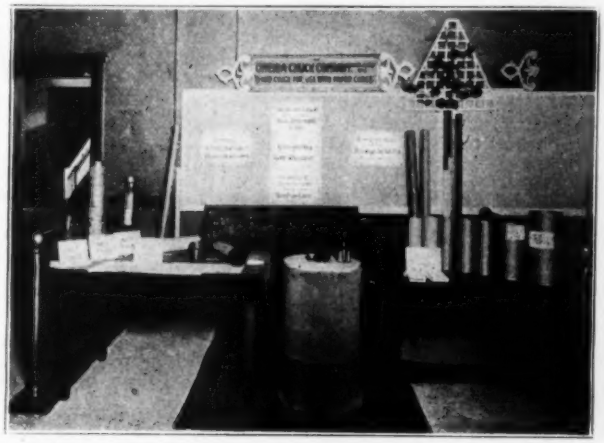
Nova Scotia has ten mills operated by water power. These mills are all of moderate size and have a total installation of 17,331 hp. Their daily producing capacity is some 200 tons of mechanical pulp and 50 tons of newsprint.

*Extract from bulletin issued by the Department of the Interior, Canada, Dominion Water Power Branch.

Successful Graphic Arts Exposition

The Milwaukee Exposition and Convention, held at the Auditorium from August 18 to 23, brought together craftsmen from all sections of the country and from various organizations. The spirit that was shown before the convention was prevalent throughout the meeting, and everyone profited by the good fellowship that was evident. All meetings were well attended and a great deal of attention was given to the many and interesting exhibits that were arranged by companies closely connected with craftsmen.

Among the exhibits was that of Oneida Chuck Company, of Rhinelander, Wis. They had on display a new roll collar for use with paper coils. This simple and efficient device was of great interest to printers of roll paper and all converters of paper from Jumbo roll. The method of operation of the Oneida chuck is such that it does the work without injuring the ends of the roll in any way. Many concerns are using this chuck with most satisfactory results.



Oneida Chuck Exhibit at Graphic Exposition

The Ohio Knife Company of Cincinnati had space in the center aisle of the main hall where they exhibited various sizes and kinds of the O. K. Special Paper Cutting Knives. The display consisted of knives in the various stages of manufacture, showing the process by which the knife is made ready for use in the mills.

The Lewis-Shepard Co., of Boston, Mass., exhibited labor saving handling machinery and featured their new improved type of Master Stacker. This machine is a distinct advancement in the portable elevator field, and, as such, was viewed with much interest. One of the outstanding features of the Master Stacker is its safety in operation. It is equipped with automatic locks which function as soon as the operator removes his hand from the control.

In addition to the stacker, the Lewis-Shepard Co. exhibited the Jacklift Master truck which has gained much popularity in the paper industry. The Lewis single lift was also shown.

In all, there were 98 exhibits in the Auditorium, and each one came in for their share of attention from the delegates.

DON'T

let your dryers and dryer drainage sytem deceive you

WATER AND AIR IN DRYERS

Limits Production-----at an Increased Cost

THE FULTON SYSTEM has increased production 47 per cent and at the same time reduced the steam pressure in the paper machine dryers 51 per cent, by extracting the water and air completely and constantly from the dryers.

Where the Fulton dryer drainage system is installed we guarantee maximum steam temperature in the paper machine dryers and no water present in the dryers at any time.

Let us tell you what the Fulton System will do.

You should have our booklet on paper drying.

U. S. Patents December 10, 1918 and June 7, 1921
Canadian Patents July 6, 1920, also Patents Pending

FULTON ENGINEERING CO.

MIDDLETOWN, OHIO

Pacific Coast News

September 1, 1924.

Columbia River Starts New Mill

Actual paper manufacturing operations have been commenced at Vancouver, Wash., by the new $2,000,000 mills of the Columbia River Mills, and the month marks the passing of the company from the development stage to that of production. The mill is heralded as the most up-to-date paper manufacturing plant in the Pacific Northwest.

The Columbia River Paper Mills is said to be the only paper mill in the United States with a saw mill under the same ownership sufficiently large to furnish all the raw materials required in the manufacture of paper from slabs and nonsalable lumber and at the same time capable of cutting 100,000 or more of marketable lumber daily and supplying sufficient fuel material to operate the entire mill.

The mill is built so that it can load and discharge deep water freight from its own dock, which lies on the great Columbia river, and has trackage that connects with all the Pacific Northwest railroads.

The Columbia River Mills have been built to work exclusively with hemlock logs, and only the slab and heart of the hemlock logs will be used in the manufacture of paper pulp. The rest of the log, more valuable as lumber, will be cut into various sizes by the sawmill. This sawmill, which is electrically operated and was made especially for hemlock, commenced operation on October 22, 1923. It has a capacity of 125,000 feet a day guaranteed but already has cut as high as 147,000 feet in one day.

The company in planning the mills, believed part of each log should be used for lumber. Many mills, because of inaccessibility of timber supply or limited facilities are forced to make pulp out of the entire log.

Construction engineers declare the building housing the paper manufacturing unit of the Columbia River Paper Mills to be the most modern factory building in the northwest. It is 492 feet long, 82 feet wide, and 100 feet in height at its tallest point. It is constructed of glass, interlocking tile and fabricated steel construction. The Austin Company of Cleveland, Ohio, erected the building in seventy-four working days.

The company at first will specialize in the manufacture of wrapping paper but its equipment is of such type that it can turn to the manufacture of any kind of paper. One paper-making machine is now being used by the mill, and officials have announced that they are ordering another machine to be installed this Spring. The second machine can be installed without alteration or increase in the size of the building.

The officers of the Columbia River Paper Mills are: F. W. Leadbetter of Portland, Ore., president; W. R. DuBois, of Vancouver, vice-president; J. J. Donovan, of Vancouver, secretary; Hamilton F. Corbett, of Portland, Ore., treasurer; C. W. Ryan, of Vancouver, assistant treasurer. The company's capitalization is $2,000,000.

Powell River Dam Progressing Rapidly

At the Powell River Mills, Powell River, British Columbia, construction work at the dam reached an interesting stage during the month when work of raising the dam was commenced. In order to increase the height by 11 feet, 1,830 cubic yards of concrete have been placed in the headgate section alone, and the work of replacing the control mechanism has been completed.

The three new gates for No. 4 Penstock are now in place and gates for the other three Penstocks have been constructed, and will be installed in a week or two when emergency headgates will be removed and that section of the concrete work raised to the same level. When the emergency gate mechanism, the trash racks and the watchman's house are replaced the headgate section of the dam will be completed.

Considerable progress has been made on the spillway section. Forms have been erected on the east side and on the first section of the north side and pouring commenced. An overhead trestle has been erected to facilitate the handling and pouring of concrete. The lower part of the trestle acts as a cofferdam to hold back the water when the concrete passes the height of the present solid crest. This trestle will extend completely around the spillway. The old flashboards have been removed and replaced with three inch planking in order to hold back more effectively the water during the progress of the work.

Dredging on the east and west berths of the new wharf has almost been completed. A total of approximately 1,200 scow pockets of dredged material have been taken out to date, about 650 pockets of which have been redumped in the fill. One quarter of the piling to be driven is in place.

Pioneer Does Big Export Business

Exporting more than 50,000 rolls of roofing, building and mulch papers to foreign countries during the first seven months of 1924, the Pioneer Paper Company of Los Angeles reports its greatest gain in export business since its organization in 1888. According to William Henry, vice-president and general manager of the concern, an increase of 300 per cent in exports for the first part of the year over the total for the entire year of 1923 is indicated.

The products were exported to Japan, China, Australia, New Zealand, Mexico, the West Indies, the Philippines and the Hawaiian Islands, Mr. Henry stated. Reconstruction work in the earthquake destroyed cities of Japan, and the successful application of paper mulch in the sugar cane and pineapple plantations of the Hawaiian Islands are listed as the principal factors in the increased export business.

Information received at Ridgefield, Wash., on August 17 is to the effect that the Crown-Willamette Pulp & Paper Company of Portland, Ore., may build a large paper mill at or near Cathlamet, the county seat of Wahkiakum county, twenty five miles west of Kelso, and one of the chief communities on the Ocean Beach Highway which is being extensively developed. The company has purchased the Bradley logging interest and nearly a billion feet of timber additional in Wahkiakum county and has commended logging operations. There is good water power on the Alochaman river a few miles west of Cathlamet which is on the Columbia river and about twenty miles from Astoria.

Manufacturers of paper were represented in attractive booths at the Pacific Northwest Merchants Show at the Bell Street terminal, Seattle, from August 18 to 28. The Oregon Pulp and Paper Company of Salem, Oregon, displayed products of its bleached sulphite process, including ledgers and greaseproof glassiners. The American Paper Company showed roll paper, novelties, bags, and stationery. The Powell River Company, Ltd., exhibited huge rolls of newsprint paper exactly as received by Seattle newspapers.

A new paper mill is to be erected on the Coquille river, two miles south of Coquille, Oregon. The Alpin Paper Company as the new concern is named is being financed by local subscriptions of which more than $100,000 towards a $300,000 fund has already been subscribed. The remainder will be secured through bonding. Mr. Alpin recently arranged for machinery installation to come from the east.

Wisconsin News

September 1, 1924.

Pulpwood Shortage Becoming Serious

Although third among the states in pulp production, Wisconsin is facing a critical condition as to future supplies of pulpwood for paper manufacture, according to the forest service of the Department of Agriculture.

The situation in Wisconsin is dealt with in a report on how the United States can meet its pulpwood requirements. The report was prepared by Earle H. Platt, assistant forester, and Charles W. Boyce, examiner, of the forest service, in coöperation with the American Paper and Pulp Association and the committee on perpetuation of the pulp and paper industry of the United States.

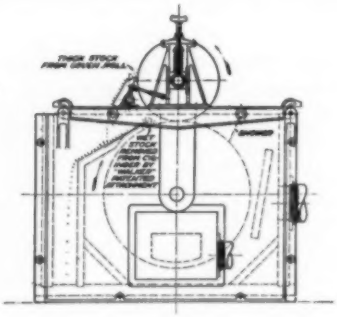
The report urges an enlargement of the area of publicly owned forest lands and devoting such lands in part to the growing of pulpwood.

"Wisconsin has for many years ranked third among the states in pulp production and now approaches New York closely" the report says. "Its production is confined largely to mechanical and sulphite pulps. It ranks third in both newsprint and total paper production.

"Although only about 27,500 cords of spruce pulpwood were imported in 1920 from Canada, Wisconsin is in about as critical a condition as to available supplies within its own boundaries as any other state.

The tendency among Wisconsin mills has been to acquire only small holdings to tide over possible emergencies, and to depend on the open pulpwood or log market for normal supply.

The stand of spruce in the state, probably about 1,000,000 cords, of which only a part is available for pulpwood, is so



Standard Deckers with Walker Attachment

(Patent Applied For)

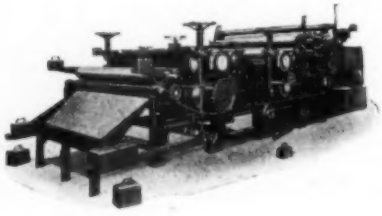
Our Deckers equipped with the Walker Attachment as shown in cut will increase your capacity 50% without requiring additional floor space, power and maintenance.

One firm has ten machines so equipped, which saved the expense of building a new Decker room.

Improvements in couch roll housings offer ready means for regulating consistency of stock.

It is a big advance in Decker design.

Write us today for further particulars.



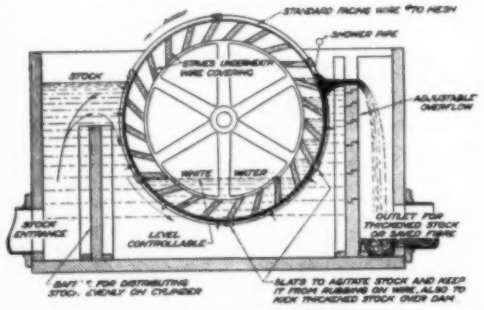
Rogers and Special Wet Machines

IMPROVED AND SIMPLIFIED
SINGLE AND DOUBLE PRESS
FOR CONVERTING CHEMICAL PULP INTO SHEETS 48% DRY

25-35 TONS air-dry pulp per 24 hours. Built in 72" width, with patented pulp weakening and separating device or our new automatic knife cut-off attachment. A real labor saver.

FREIGHT CHARGES are greatly reduced. Savings on this item alone often pay for the machine in one year.

All infringements will be vigorously prosecuted


STANDARD RACINE WIRE 70 MESH
SHOWER PIPE
STRIKES UNDERNEATH WIRE COVERING
STOCK
ADJUSTABLE OVERFLOW
WHITE WATER
STOCK ENTRANCE
LEVEL CONTROLLABLE
OUTLET FOR THICKENED STOCK OR BAKED FIBRE
BAFFLE FOR DISTRIBUTING STOCK EVENLY ON CYLINDER
SLATS TO AGITATE STOCK AND KEEP IT FROM RUBBING ON WIRE, ALSO TO KICK THICKENED STOCK OVER DAM

A. O. Wood Machine

Used as Pulp Thickeners, Savealls, Pulp Washers and Water Filters

ADVANTAGES:

Reduced Wire Costs	No Couch Roll
Enormous Capacity	Minimum Repairs
Only 2 H. P. Required	No Doctor
Works Automatically	Requires No Attention

OVER 150 MACHINES SOLD AND IN USE

Wells Undulating Knot and Sliver Screen

Will bear closest investigation from every angle. It separates knots and slivers from all kinds of pulp efficiently, continuously, automatically with negligible cost for operation and upkeep. Simple but rigid construction. Only best materials used. Operation in plain view.

40 TONS DAILY CAPACITY, STANDARD SIZE. WRITE FOR BLUEPRINT AND FURTHER INFORMATION

PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

OUR LINE IS MANUFACTURED IN CANADA BY

THE NORTHERN FOUNDRY & MACHINE CO., LTD., SAULT STE. MARIE, ONT.

small it could hardly supply the spruce requirements of local mills for more than two or three years if they were entirely dependent on it.

Although the total stand of fir is somewhat larger, probably still less than of spruce is available for pulpwood. The hemlock stands while originally extensive and still amounting to more than 30,000,000 cords, are held very largely by lumber companies, so that aside from their own timber holdings paper mills have to secure hemlock logs in competition with the sawmills.

In 1920 a representative of one of the companies purchasing pulpwood for a large number of mills, said spruce supplies for the Wisconsin mills were in 1904 secured largely in Wisconsin, and that in 1915 these mills had to bring their material from farther north, in Minnesota, but that it was rarely necessary to go more than fifty miles north of Duluth.

In 1920 a material part of the supply came from the extreme northern part of Minnesota. Spruce was being hauled in 1920 from 700 to 750 miles by rail from Minnesota to Wisconsin mills, and from 1,000 to 1,200 miles from Canada.

"Meanwhile, the competition of Minnesota mills, alarmed as to their own future supplies, had become so severe that Wisconsin was forced to secure its spruce in rapidly increasing quantities, and at higher freight rates, from the northern peninsula of Michigan.

Most of the spruce and fir now used comes either from Minnesota or the upper peninsula. Competition of Minnesota mills threatens gradually to eliminate that source, and the upper Michigan supply is comparatively limited.

For hemlock, of which a much larger stand still remains, both in Wisconsin and the upper peninsula, the mills can draw on their own small holdings in both states; to a certain extent they may be able to trade their hardwood timber for hemlock; they can, as in the past, purchase the poorer logs from logging operation.

They may in more severe competition take higher grade logs in addition, and they may, as heretofore, purchase from farmers second growth hemlock, exceedingly limited though it is, and thereby aid in eliminating the possibility of future hemlock stands.

As in Michigan only the jack pine remains. Wisconsin had a stand of 10,000,000 cords, in part so scattered as to be unavailable and in part certain to be demanded for other use. This can probably be supplemented from the upper peninsula and Minnesota.

The possibilities of growing hemlock in the future are not very bright and under any methods of management now known. The amount of spruce grown in Wisconsin will not be large enough, because of the relatively small area of spruce lands in the state.

It should be possible to grow larger quantities of jack and other pines, from which, if proper methods can be developed, the sulphite, if not the mechanical, pulp industry can be perpetuated.

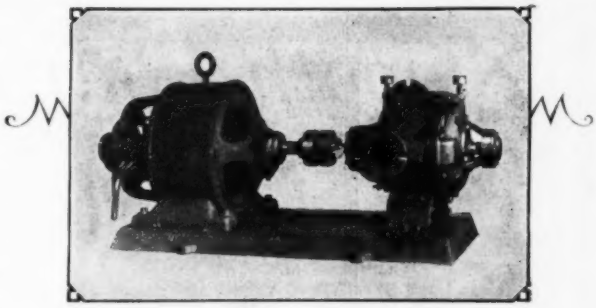
Water and Pulp Conditions Very Good

According to reports from Wisconsin the water conditions in that State are the best that they have been for a good many years.

A very unusual amount of rain is responsible for the present conditions, as during the very early part of the month for three or four days the greatest amount of rainfall known for many years was had. There were floods in different parts of the state, but none of these happened where they affected any of the pulp or paper mills. Rain was intermittent on and off during the month, which also improved the water conditions.

August is usually a low water period, and many mills consider themselves fortunate if they are able to operate their electrical units, to say nothing of the pulp units, during that time. However during the present month of August most companies have not only been able to operate their electrical units, but have also been running their grinder plants, some of them to full capacity. This is something very much out of the ordinary, and pulp is being stored in large quantities by most mills.

Pulp and paper mills on the Wisconsin River have been especially fortunate for many reasons: They have been able to run their hydroelectric plants to full capacity, thus saving many thousands of dollars worth of coal; they are able to grind exceedingly large quantities of pulp, using this direct from the pulp mill to the beater room, thus saving the labor of handling as it is generally necessary to take pulp from storage at this time of the year. Most of the mills are piling a great deal of pulp and a visit to the different mills shows some very nice pulp piles. All of it is new pulp as the low water condition last year used up all the pulp that was on



Nash Hytor Vacuum Pump, direct-connected to electric motor. Supplied in sizes ranging from 25 to 2150 cu. ft. air per min. at a vacuum of 12 in. of mercury.

Vital to suction rolls and flat boxes

Modern paper machines operate at high speeds—hence it is necessary that the water be taken from the paper rapidly and efficiently. It must also be done with great care.

A powerful vacuum pump, producing a steady suction free from pulsation, and successfully handling large volumes of water and air, is vital if suction rolls, flat boxes, etc., are to operate at top-notch efficiency.

Paper mill superintendents and others realize this, and therefore an ever-increasing number are standardizing on the Nash Hytor Vacuum Pump.

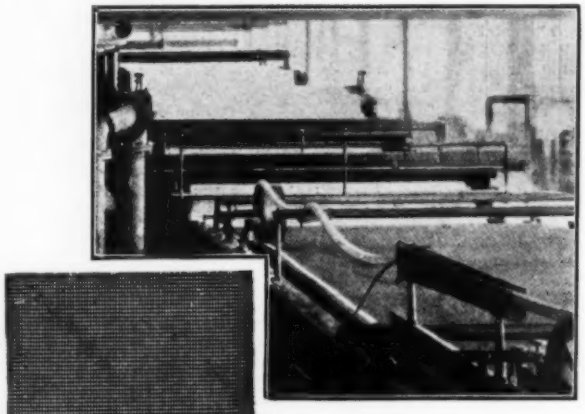
The Nash Hytor is absolutely dependable in action. It has only one moving part, the rotor—there are no valves, sliding vanes, pistons, gears, crankshafts, cams, or other complicated parts to jam, stick, or get out of order. The Nash Hytor will run continuously for years without any attention other than timely lubrication.

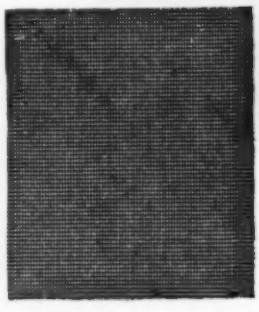
Write for special literature,—also for a graphic device showing unique principle of operation of the Nash Hytor.

Nash Hytor

NASH ENGINEERING CO SOUTH NORWALK CONN

Smooth Fourdrinier Wire—





Of an even mesh, that does not groove the Suction Boxes and runs "smooth as silk" over them. No seams have to be cut, no Suction Boxes have to be planed, and you are assured of long life and increased production with CABBLE SUPERIOR FOURDRINIER WIRES.

Made of the highest quality brass or phosphor bronze, every length is tested before leaving our factory. Seams made to suit your individual requirements.

Let us fill your next order and show you what prompt service and fine quality we can give you.

The WM. CABBLE
EXCELSIOR WIRE MFG. CO.
80-88 AINSLIE ST. BROOKLYN

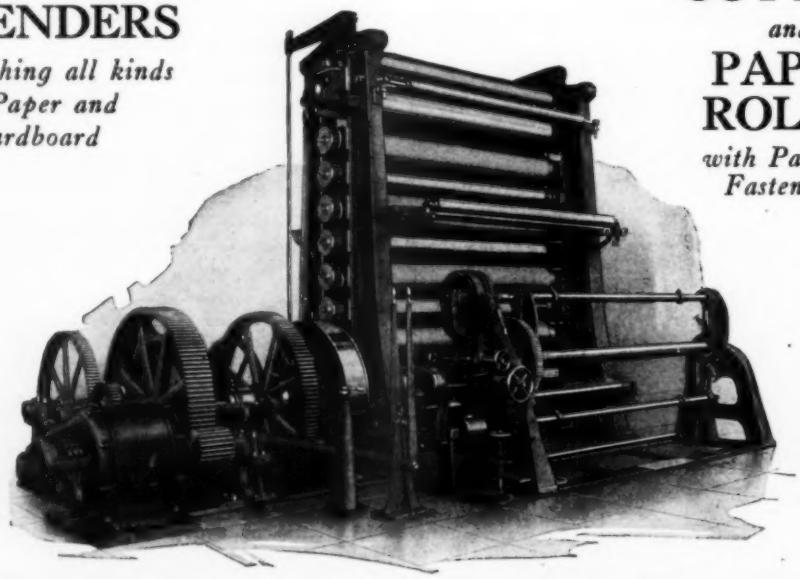
Holyoke Machine Co., Holyoke, Mass.

Makers of **Improved Machinery for Wood Pulp and Paper Mills**

LARGEST MAKERS *of*
CALENDERS
for finishing all kinds of Paper and Cardboard

COTTON *and* **PAPER ROLLS** *with Patented Fastenings*

Platers, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters



Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors

hand, so the pulp in the present piles is all freshly made pulp.

Another big advantage to the mills in the Wisconsin Valley is that their reservoirs are at a considerably higher level than they have been for many years; and it has not been necessary to release a large amount of water from this storage to keep the river near its normal level during the summer low water period, as has always been done during the past. This water will be used to very good advantage during the coming winter months, and all mills will not only be able to run their electrical units, but most of them will be able to grind pulp as well.

With the above conditions the mills in the Wisconsin River Valley especially, as well as the others in Wisconsin, are in better shape than they have been for a long time, and it is very probable that none of the mills will have to curtail production on account of a shortage of groundwood, as has usually been the case in winters past.

The Wisconsin River during the latter part of August was 5 feet above the normal stage of the river at this time of the year.

U. S. to Make Survey of Pine

An extensive investigation and survey of pine forest in Wisconsin has been undertaken by the state conservation commission, coöperating with the Lake States Forest Experimenting station at St. Paul.

C. L. Harrington, state superintendent of forests, has just completed an extensive tour and inspection with a party of investigators from the federal station.

A station has been established in the northern part of the state from which operations of the survey will be conducted.

Michigan News

September 1, 1924.

Good Grade Fiberboard Made from Sawdust

The United States Gypsum Company with mills in Grand Rapids, Mich., Fort Dodge, Ia., and other points, reports that they are successfully manufacturing a good grade of fiber board from sawdust. Recently this firm closed an agreement with the owners of a vast area of sawdust located at Cheboygan, Mich., a one-time great lumber producing center. A sawdust mountain covering thirteen acres is rapidly being moved by the purchasers, six carloads a week being shipped to their various mills, the bulk going to Grand Rapids. The sawdust mountain is said to be the largest in the world, and is estimated to contain more than 125,000 tons.

Should all of the sawdust prove usable, the pile will produce 1,666,000,000 square feet of fiber wall board, officials of the United States Gypsum Company estimate. The sawdust makes the product, which has a certain percent of gypsum in its make-up, tough and yet lightens its weight. It is said that the process employed in amalgamating the sawdust with the gypsum rock produces a fiber wall board which is practically fireproof, and it can be sawed and nailed just like wood.

Out of each carload of sawdust more than 200,000 square feet of fiber wall board can be manufactured, say the officials. Although this provides for nearly 1,225,000 feet weekly production at two of the largest mills, it is not enough.

Sawdust is also shipped from other places to supply the mills. The corporation has seven mills throughout the United States concentrating at the present time on this fiber wall board production.

No contract exists between the United States Gypsum Company and the owners of the sawdust mountain for the outright purchase of all of the material or for the continuous shipment of it. The wall board factories will continue to use Cheboygan sawdust so long as its quality continues high. Should it all prove usable, the resultant 1,666,000,000 feet of fiber wall board would supply the country's demand for less than two years, it is pointed out.

$50,000 for Rex Mill Improvements

Between $40,000 and $50,000 is being expended by the Rex Paper Co. to improve its plant, located east of the city of Kalamazoo. An addition, brick and steel, three stories high and 50 by 108 feet in dimensions is being erected at the east end of the present mill. One-third of this space will be used as the new office, and the balance for storage and additional finishing room space. The present office space will be used for additional finished storage space for the finishing department. The O. F. Miller Co. has the contract for the erection of the new building.

Two rotary screens, product of the E. D. Jones Co., Pittsfield, Mass., will replace the flat screens on the paper machine, insuring a cleaner sheet of paper. Another improvement will be the installation of the Stickle Steam Specialty

STEEL
for Immediate Shipment from Stock
For Maintenance, Construction and Repairs

Bars	Boiler Tubes
Shapes	Boiler Fittings
Structurals	Corrugated Sheets
Rails	Concrete Reinforcing
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Write for the Ryerson Journal and Stock List —the "Key" to Immediate Steel
JOSEPH T. RYERSON & SON INC.
CHICAGO CINCINNATI BUFFALO
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SIMONDS
Barker and Chipper Knives
The best knives for Pulp Mills. Made of the finest edge-holding steel, skillfully made and tempered right to withstand wear.
Write for Catalog and Prices
Simonds Saw & Steel Co.
Fitchburg, Mass. Chicago, Ill.

Here's new profit for you, Mr. Mill Owner,—an Oliver economy worth consideration.

Reburned cake will produce high-grade quicklime worth $8.00 to $12.00 per ton at an average cost of $6.00 per ton.

Reburn Your Lime Mud
Turn Waste Into Profit

Complete data on request

Oliver Continuous Filter Co.

San Francisco
501 Market St.

New York
33 W. 42nd St.

London
11-13 Southampton Row, W. C.

Company's drying system to provide uniform drying of the coated stock. This system is being installed by the Kalamazoo Blow Pipe Company.

"The improvements in progress are to improve the quality of the mill's output, not increasing the general production," said Merrill B. King, president of the Rex Paper Company, while discussing the program now under way. "Last February, we changed the schedule of operations in our coating plant from nine hours to 20 hours daily. The result is that 90 percent of our output is now coated paper. As that all has to be hand sorted, we are greatly enlarging our finishing and storage space for finished product room."

Buskirk to Succeed Bradford at Rex

C. A. Buskirk, formerly of the Wolverine Paper Co. will succeed Clarence Bradford as sales manager of the Rex Paper Co. was announced by Merrill King, president of the Rex Paper Co. Mr. Bradford has resigned to head his own organization. Mr. Buskirk will assume his new duties on or about October 1st.

I. C. C. Decision Soon on Freight Row

Evidence attempting to prove that railroad coal rates, from Kentucky and West Virginia to the Kalamazoo and Grand Rapids and other Western Michigan paper manufacturing cities, are from 25 to 40 per cent too high, was submitted at the hearing before P. F. Gault, Washington examiner for the Interstate Commerce Commission, during the August session of the United States District Court in Grand Rapids, Mich. Mr. Gault is expected to hand down his decision at an early date.

The hearing was brought about on the combined complaint of the Kalamazoo Chamber of Commerce, the Michigan Paper Manufacturers' Association, the Muskegon Chamber of Commerce, and the Grand Rapids Association of Commerce, against the Chesapeak & Ohio Railroad Company.

J. F. Dougherty, traffic manager of the Michigan Paper Manufacturers' Association, was in the witness chair a whole afternoon during the hearing, and, by a series of charts proved that by any method of figuring, the present alleged unfair rates in the Western Michigan territory are too high. "They are unreasonably too high. That's the thing we are fighting. They're out of reason. And there's no reason for it. We're going to fight this thing through to a finish, and don't forget that," is the substance of Mr. Dougherty's determined plea.

In the summary of his case, Mr. Dougherty asserted that by thirty-two different ways of figuring the rate, the railroad transportation toll, which is at present $3.25 for Grand Rapids and $3.10 for Kalamazoo per ton, is respectively 32 cents and 40 cents too high. And the rates to other Western Michigan paper manufacturing centers are just as proportionately out of reason, Mr. Dougherty pointed out with emphasis.

Paper to Be Extensively Used in Auto Industry

A report, which is said to come from authoritative sources, forecasts that certain manufacturers of medium price and cheap automobiles made in Michigan, are now planning to put out cars the coming season with paper composition bodies. These bodies are claimed to be impervious to moisture and can be washed just exactly in the same manner as metal bodies. The report goes on to say that those who are in the "know" declare that the paper bodies will retain a good finish much longer than metal bodies. It is claimed that finish will stick to paper a great deal better than to wood, and it is pointed out that enamel will not jar off as easily by vibration.

It is a well-known fact that paper has heretofore been used by at least one large manufacturer to make automobile bodies, but this is the first time that it is to be used so extensively, according to the seemingly well-founded report.

Among the parts of an automobile already using large quantities of paper or paper composition in their construction are gaskets, shims, and padding for metal panels, otherwise known as sound deadeners. Much imitation leather upholstery is made of paper, especially the inside lining of doors and walls of the cheaper makes of automobiles.

If the report pans out as true, the paper industry will experience a healthy and overwhelming boom, as it is anticipated that the demand will be enormous.

Eddy Co. Holds Annual Convention

The Eddy Paper Corporation employes and families held their second annual picnic on Saturday, August 16, at Fisher's Lake, near Three Rivers. Both the White Pigeon and Three Rivers mills turned out en masse for the occasion.

Festivities started at 9:30 a. m., when the parade headed for the picnic grounds, headed by the Bronson 35-piece band.

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

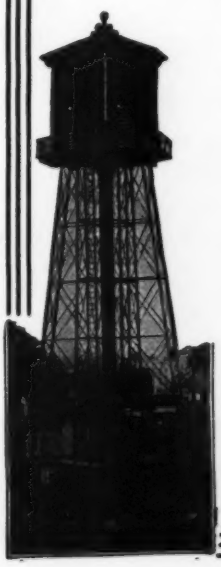
Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
17 Battery Place New York

Starch

A Super Tower

Generosity typifies the design and construction of Caldwell Structural Towers. To provide the strength and sturdiness that have marked the unusual success of this type of tower for heavy loads and great heights we have spared no precaution in material or workmanship.



This tower is built of heavy structural shapes thoroughly laced and riveted together by the most modern scientific engineering methods. It is built for steel or wood tanks in capacities from 15,000 gallons upward.

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W. E. Caldwell Co.
Incorporated
2570 Brook St.,
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Caldwell TANKS AND TOWERS

J. O. ROSS ENGINEERING CORPORATION

30 EAST 42nd STREET, NEW YORK CITY

CHICAGO, ILL. TACOMA, WASH. BOSTON, MASS.

ROSS ENGINEERING OF CANADA, LIMITED

NEW BIRKS BUILDING, MONTREAL

Machine Vapor Absorption Systems
Briner Economizers
(Licensed Under Patents of E. A. Briner and John Alexander)
Machine Room Ventilation
Blower Systems of All Kinds
Heating Systems for Finishing
Beater, Grinder and Storage Rooms
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Waldron Equipment for Coated, Gummed, Wall and Abrasive Papers

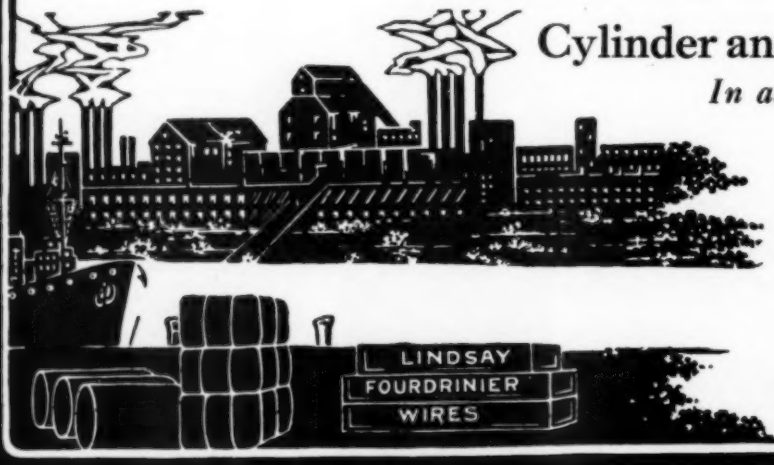
"ROSS" UNIT HEATER---THE "ONE" PIPE FURNACE OF THE PAPER MILL

LINDSAY WIRES

are

DURABLE AND DEPENDABLE

Made in all sizes



Cylinder and Washer Wires
In all Meshes

The Lindsay Wire Weaving Company

Collinwood Sta. Cleveland, Ohio

The morning was devoted to informal baseball games and horseshoe pitching contests. For dinner there were vast supplies of barbecue beef, potato salad, corn on the cob, baked beans, and all the trimmings.

Everyone enjoyed the varied sports program put on in the afternoon. Among the features should be mentioned the crab race, the tug of war between the White Pigeon and Three Rivers divisions, the Mother Hubbard baseball game, and the tub race. Valuable and amusing prizes were presented for every one of the 26 events.

Supper was served in the evening, after which the crowd adjourned to the dance pavilion. Steimrich's orchestra from Elkhart furnished the music.

Kindelberger and Logan to Go to Mexico

Mr. Jacob Kindleberger, president of the Kalamazoo Vegetable Parchment Co. and James Logan, president of the United States Envelope Co. plan on going to Mexico with the American Industrial Mission to Mexico, which was organized by the American Manufacturers' Export Association. This will take place Sept. 9 to 23, and will include in its list of 125 participants these two very prominent paper men.

Mr. Kindleberger will make connection with the New York train at Indianapolis, going on over the Pennsylvania to St. Louis and there taking a special over the Missouri, Kansas and Texas railroad (The Katy) to Dallas, and thence to Mexico City and other points in Mexico. The American will be met at the Mexican border by a numerous delegation of officials and a military escort.

The object of this delegation is to better understand the Mexican situation, and by understanding it, be able to export more of our manufactured products to our southern neighbor.

Protest Freight Rates on Resin

Combining their suit to enjoin the United States and the Interstate Commerce Commission from enforcing certain freight rates on shipments of resin from points south of the Ohio River to Western Michigan territory, the Western Paper Makers' Chemical Company of Kalamazoo, Mich., and the Tanglefoot Company of Grand Rapids, Mich., in a bill which they presented to the United States District Court in Grand Rapids the middle of August, relate that the commission conducted a hearing in the matter and finally suspended the tariffs protested against it, but substituted others just as objectionable to the plaintiffs.

These new rates went into effect August 20, and the plaintiffs allege that the new rates to Kalamazoo and Grand Rapids are the same as those to Chicago and Milwaukee. They asked temporary and permanent injunctions and a decree modifying the freight rates.

Bradford to Leave Rex Paper Co.

Clarence Bradford, for the last seven years vice-president and general sales manager of the Rex Paper Co. has resigned from that concern, to take effect October 1, 1924.

Mr. Bradford states his reason for resigning is his desire to head his own organization. He is planning on organizing a paper company to coat paper exclusively.

Mr. Bradford is very well known in the paper game, being sales manager of the King Paper Co. at one time, and also working in the board game at White Pigeon for several years.

Merril King, president and general manager of the Rex Paper Co., states that the best of feelings exist between him and Mr. Bradford, and Mr. Bradford has given the Rex plenty of time for choosing a sucecssor to fill the important office of vice-president and sales manager.

Bryant Improving Property

The Bryant Paper Co. are paving the roads which lead to their different divisions which are on their private property. They are planning on cementing them all.

The Bryant Pond, where they get power for their electric lights in their different divisions, is being filled in with white crushed rock, to prevent the banks from being washed away. This improves the looks of this along the west bank, next to the Superior Division.

Mr. Edward Rutz, superintendent of power and maintenances, has also been made head gardener. The yards and grounds certainly show the results of this change. Mr. Rutz takes a very keen interest in the appearance of the mill grounds.

Business in the Valley

August opened up very favorable to the paper manufacturing business. The presidential candidates were chosen, and things looked fair for an increase in business. The orders

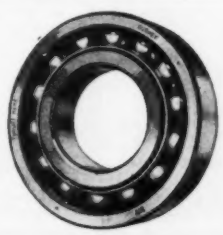
GURNEY
BALL BEARINGS

for Paper Machinery

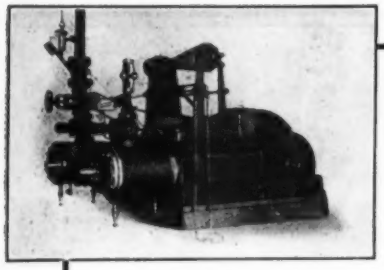
THE easy running feature of Gurney Ball Bearings insures a greater and more uniform output for paper making machinery—and reduces upkeep and repair bills to a minimum. A charge of lubricant every month or so is all the attention required to keep the bearings in perfect condition. That is why The Bagley & Sewall Company uses Gurney Ball Bearings in their paper making machinery.

Let our bearings help eliminate any difficulties you are now having with bearings of other types. Our engineering department is at your service.

1838



Marlin-Rockwell Corp.
JAMESTOWN, N. Y.



This Variable Speed Engine

1. USES 50 PER CENT LESS STEAM THAN YOURS.
2. HAS SPEED RATIOS UP TO TEN TO ONE.
3. GIVES UNVARYINGLY CLOSE REGULATION.
4. PRODUCES PAPER OF UNIFORM THICKNESS.

AND DOES IT TWENTY-FOUR HOURS EVERY DAY

It's a Good Investment---**IT'S A PROSSER**

Made only by

The CHANDLER & TAYLOR CO., Indianapolis

Make One Boiler Do the Work of Two

WITH the Morehead Back-to-Boiler System you can often double a boiler's efficiency. The system will return the condensation to your boilers as hot distilled feed water—saving fuel and cutting down repair expense.

The simple and compact system will enable you to do away with your extravagant and troublesome steam pumps or injectors. The Morehead system will feed your boilers positively and automatically. Repairs are seldom needed. Parts are quickly and easily replaced when necessary. Write us. Our engineers will work on your problems without obligation on your part.

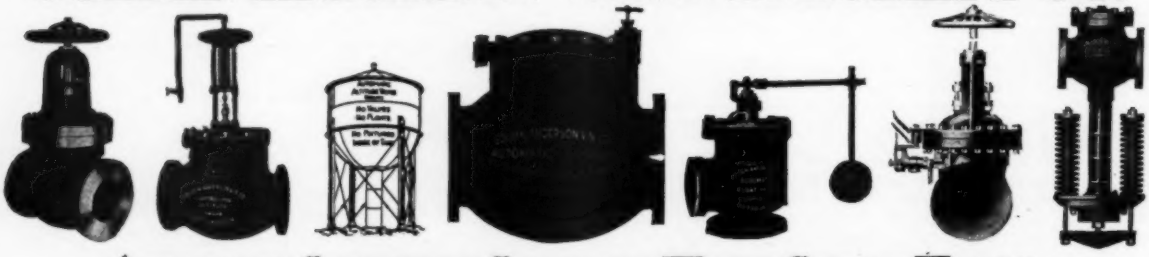
Morehead Manufacturing Co.

Dept. O, Grand River Ave., at Warren

DETROIT MICHIGAN

(133)

GOLDEN-ANDERSON VALVE SPECIALTY CO.



AUTOMATIC CUSHIONED STEAM AND WATER-SERVICE VALVES.

"We Challenge to Test for Merits Any Automatic Steam or Water-Service Valves in the World"

1240 FULTON BUILDING. PITTSBURGH, PA.

came in larger, and the general feeling of unrest seemed to have been broken. But things have slumped.

Sales managers are having a hard time keeping their mills running, and competition as a result is very keen for any desirable business which comes up. Several of the larger mills have shut down part of their plants and the feeling of unrest has returned.

A slight increase is looked for in September, but no really big increase until after the presidential election.

A. H. Dwight Bereaved

The whole paper manufacturing industry joins President A. H. Dwight of the Hawthorne Paper Company, of Kalamazoo, Mich., in the recent great loss of his wife.

Mrs. Dwight was 69 years old, and was socially prominent throughout the state of Michigan. She was well-known in Chicago, having been connected with a number of this city's most influential families, and having at one time resided here. Mrs. Dwight was widely known for her social betterment activities, which cause she was intensely interested in, and for which she contributed liberally of both her means and time.

Imports Cargo of Pulpwood from Sweden

The Consolidated Paper Company of Monroe, Mich., on August 4, received a cargo of 1,400 tons of pulpwood at the dockyards of Toledo, O., which was shipped from Olba, Sweden, on the steamship Julius Holmblad.

This is said to be the first time a steamship from Sweden has docked at Toledo with a cargo of pulpwood. It took the steamer twenty-eight days to make the trip. It came by way of the St. Lawrence and Welland canal.

Ohio News

September 1, 1924.

Miami Valley Division Superintendents' Meeting

The August meeting and outing of The Miami Valley Division of The Superintendents' Association, was held August 23, 1924, at the Log Cabin on the estate of Mr. Charles Shartle, on the Dixie Highway between Franklin and Miamisburg, O.

The members began arriving in the afternoon to enjoy the hospitality of Mr. Shartle and his co-workers. The time was spent in diversions of various kinds, and at six o'clock all sat down to a delicious steak dinner with all the good things that go with it.

Shortly after seven o'clock, the meeting was called to order by the Chairman, Mr. Lloyd T. Murphy, with Mr. H. D. Martindale acting as Secretary.

The speaker of the evening was Mr. Harry Myers, of the Ohio Brass Company, of Mansfield, Ohio, who gave a very interesting and helpful address on the subject of "Personnel Work as Applied to Industries."

This proved to be a very interesting subject and quite a bit of discussion was had by the different members, and Mr. Myers was asked many questions, and he cited many instances on record to bear out his answers and statements he made during his talk.

Mr. R. W. Jenkins, representing The Ohio State University, gave a short talk on the subject of Vocational Education in the Paper Industry, and which matter will be taken up during the winter months by the Association in connection with the Apprenticeship work.

A discussion was had as to the best plan to present this matter to the members and others who are interested in this work. A motion was made to have Mr. Jenkins write a letter giving the details and other information on this subject to the members of this division, and each member is to bring a report from the employes in his mill to the next monthly meeting.

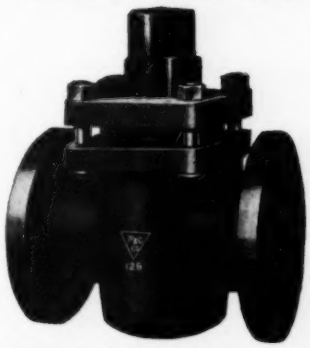
It will then be decided what plan will be outlined for the winter work along this line.

The Chairman called the attention of the members to the next meeting, which is to be held at the Manchester Hotel, Middletown, O., on Saturday evening, September 27th, beginning at 6:30 p. m.

The Secretary was instructed to notify the Committee on Nomination of Candidates for the various officers for the coming year, that the annual election will be held at this meeting. This meeting will also include further discussion on the subject of Printing Papers and it is hoped that we will be able to have one or two prominent speakers with us at this meeting.

A rising vote of thanks was given Mr. Shartle for his splendid entertainment and hospitality, and a vote of thanks was given to Mr. Myers for his contribution toward the enjoyment of the evening.

PRATT & CADY
ASBESTOS PACKED
COCKS



Pratt & Cady Asbestos Packed Cocks are ideal for handling pulp. It is not necessary to clean the seat each time the digester is charged.

READING STEEL CASTING CO., INC.
Pratt & Cady Division
General Sales Office: Bridgeport, Conn.
929 Connecticut Avenue
An Associate Company of the American Chain Co., Inc.

Bronze Mounted or All Iron
"Pilot" Gate Valves
WITH OUTSIDE SCREW STEM AND YOKE

FIG. 480

Screwed or Flanged Ends
Working Pressure
Up to 125 Pounds
Sizes ⅛ to 6 Inches

Especially Adapted for Handling
ACIDS, ALKALIS & CORROSIVE SOLUTIONS

Order
POWELL VALVES
from your dealer

Write for Descriptive Circular

THE WM. POWELL CO.
CINCINNATI, OHIO

QUALITY SPEED DURABILITY MEISEL

Reg. U. S. Pat. Off.

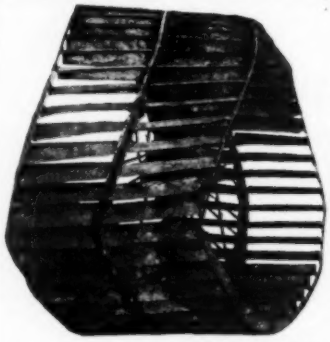
Quality: Design, Workmanship and Material put into our manufacture is the best to be had.

Speed: Our tools are the most modern type from which accurate work is produced, making our manufactured product speedy.

Durability: First-class Workmanship and Material as well as Design tend to make our manufacture lasting.

Are you acquainted with our Slitters and Rewinders, Printing Presses and facilities for manufacturing? Let us hear from you.

Meisel Press Mfg. Co.
942 Dorchester Ave. Boston 25, Mass.



This blast wheel is an extraordinary demonstration for the strength of Plexiform construction and bears out the claim of Bayley engineers—proven many times by less severe tests— that Plexiform construction has the maximum of structural strength, though comparatively light in weight.

STRENGTH

This wheel was crushed under tons of debris when a four-story building collapsed upon it.

Not a rivet was broken, not a joint loosened, nor a fracture in any part.

Strength of materials is sometimes proven by unusual tests, by strains out of all proportion to those experienced in actual use. 21

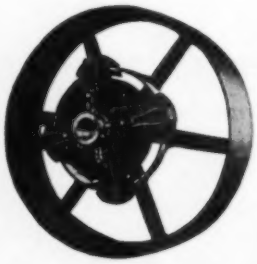
Bayley

Manufacturing Company
734 Greenbush Street
MILWAUKEE

MANITOWOC ENGINEERING WORKS
MANITOWOC, WISCONSIN

Designers and Builders of

Digesters
Paulson Barking Drums
Experimental Digesters
Autoclaves
Wash Tanks
Diffusers
Disc Evaporators
Incinerators
Blow Pipes
Causticizing Tanks
Howard Refiners
Storage Tanks
Cylindrical Rotaries and Globe Rotaries
Bleach Mixers
Clay Mixers



FALLS SOLID FRICTION CLUTCH PULLEY

A complete line of

Power Transmission Machinery
FOR
BELT AND ROPE DRIVES
MANUFACTURED BY
THE FALLS CLUTCH & MACHINERY COMPANY

NEW YORK 206-208 Fulton Street
Cuyahoga Falls, Ohio
BOSTON 52 Purchase Street

Catalogues upon request

Wax Paper Plant Does Big Business

The Nashua Gummed and Coated Paper Company, Plum Street, this city, is known all over the United States by the waxed wrappers made and printed for manufacturers throughout the union. On one edge of the wrapper is the trade mark and the name of the manufacturers and "Middletown, Ohio."

An unusual feature of the concern is that although large quantities of paper are shipped into the paper markets every day, no paper is manufactured by the Nashua Company. The paper is purchased from Middletown manufacturers and from other paper mills throughout the middle west. At the Nashua plant the paper is gummed or waxed and attractive designs are printed on it in three colors. Then it is wound on spools, cut the widths desired and shipped to the purchasers.

The plant of this company in Middletown is one of three, one being located in New Hampshire and another in Canada. The New Hampshire plant is larger than the local plant, but the one in Canada is smaller. The plant in Middletown is divided into two mills, one for gumming and the other for waxing. The industry was organized locally in 1917 and in 1920 a new addition was erected. The month of June, 1924, was the largest month in the company's history, comparing the number of deliveries.

A special machine has been devised by the company for the use of the gummed tape it produces. The waxed paper output is 80 per cent of the deliveries.

The Nashua has its own art department consisting of five artists who daily work on new designs and methods of advertising to be displayed on wax paper.

An interesting product of the concern is the waxed paper surrounding each bundle of five pieces of chewing gum put out by the chewing gum manufacturers. The paper wrapped around each piece is plain thin paper that is non-sealing. The waxed paper is air-tight and water-proof and yet it is opaque so that the merchandise within can be plainly seen.

Recently eight carloads of waxed paper, consisting of 50,000 pounds each, were shipped from the Nashua Gummed and Coated Paper Company to one of the world's largest manufacturers of chewing gum.

The wax on this paper is a paraffin made from the various oils bought by the company in Pennsylvania, Texas, New Mexico and Oklahoma. After the oil is received, the paraffin is removed and takes the form of an odorless, tasteless substance. It is bought on the market according to its melting points, of which there are three, low test wax, medium test wax and high test wax.

The wax is liquidized and the paper either pulled through or dipped by a machine known as the dip roll. The paper after it has received its coat of wax is rolled in tape form ready for the market.

Gardner-Harvey to Make New Additions

The Gardner and Harvey Company, manufacturers of paper, paper board and cartons, will build two new buildings at a cost of $50,000, according to an announcement made by E. T. Gardner, president of the organization. The contract has been let for the buildings which will be an additional factory building and a warehouse for the carton division.

The factory building will be a duplicate of the building now in use, a one-story structure with a floor space of 7,000 feet. The warehouse will be one story high and have 25,000 feet of floor space. Both will be brick, of fireproof construction.

These additions will enable the carton division of the company to double its production as more printing presses and other machinery for pasting and printing of cartons will be added immediately upon the completion of the new buildings.

Just a year ago in July the carton division of the Gardner Harvey Company was purchased from the Universal Products Company, of Clyde, Ohio. The necessity of additional space so soon shows that this department has made substantial progress.

The F. K. Vaughn Construction Company, of Hamilton, erectors of the present building of the carton division, have the contract for the additions and the work will be begun within the next thirty days.

Paper Stronger than Iron

Recently, the Wrenn Paper Company, of Middletown, was able to give aid to a city, stricken by an ice famine during the hot summer months. The city had fully equipped ice plants, but they availed not without filter paper. One of the ice plants used a newly invented machine for the manufacture of the ice but large quantities of the filter paper was needed, for the process of purifying the water had been changed from one of distillation to one of filtration. The water enters large metal

Steers won't grow according to specifications

STEERS furnish hides "as is." Thick hides. Thin hides. Tough ones. Weak ones.

Yet despite this difference, the Graton & Knight Standardized Series guarantees you belts absolutely uniform in quality and service. The right belt for the right job.

How can this standard quality be so rigidly upheld? Only by keeping thousands upon thousands of hides in storage. Summer hides only—for they are best for belting use. Hides from our own great West—Europe—South America. Every market that yields the finest hides for different types of belts.

From this enormous stock the hides are carefully selected and held to exacting standards. Picked so two belts of any Standardized Series brand are always exact duplicates in quality of service.

You've never seen finer leather than is put into Graton & Knight Standardized Series belts. Leather that clutches the pulley without shaft-twisting, machine-wearing tension. Leather that wears.

Write for booklet 101-S, which gives full information about Standardized Series belts for paper mills.

THE GRATON & KNIGHT MFG. CO.
Tanners—Makers of Belts and Other Leather Products
Worcester, Mass.

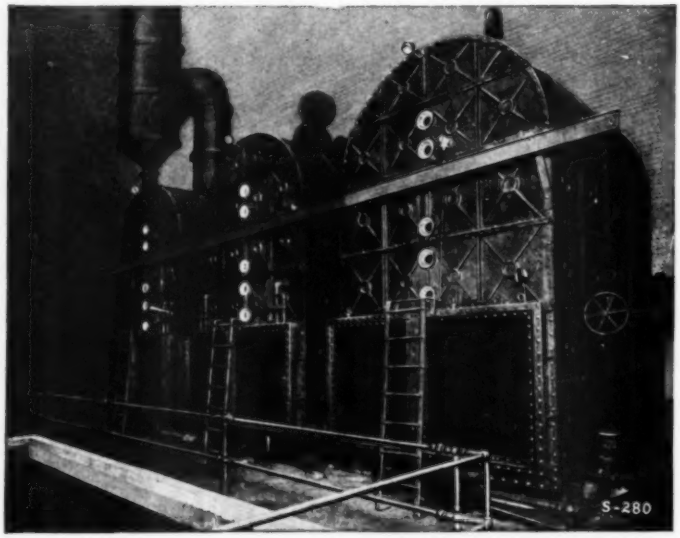
GRATON & KNIGHT

Check this list of Graton & Knight products for informative booklets on the subjects which interest you.

Flat Belt	Lace Leather	Whole Leathers
Round Belt	Leather Packings	Cements
Fan Belts	Leather Straps	Preservatives

GRATON & KNIGHT
Standardized
LEATHER BELTING

The Bogalusa Paper Company Profits by a Swenson Installation—Why Not You?



If you use the soda or sulphate process, Swenson reclaiming machinery will meet every requirement. Our more than 30 years' experience enables us to render you a real service in solving special problems. Our experiment station at Ann Arbor is equipped to make tests on a commercial scale (under the direction of Professor W. L. Badger) on problems involving evaporation, crystallization, heat transfer, etc., at a moderate charge. Whiting Corporation's complete manufacturing facilities are back of Swenson products.

Submit your evaporator problems to Swenson. Bulletin P-123 on request.

SWENSON EVAPORATOR CO.

(Subsidiary of Whiting Corporation)

MAIN OFFICE AND WORKS: HARVEY, ILL. (Chicago Suburb)

Sales Offices in Chicago, Pittsburgh, Buffalo, Cleveland, Detroit, Birmingham and San Francisco

Established 1836

SOUTHWARK HYDRAULIC PRESSES *for* Pulp, Sulphite and Baling

THE presses illustrated are the Southwark Standard Type, designed for use with Southwark Trucks. These presses permit the pulp to be pressed directly on the truck, this effects a great saving in time and labor.

We have many other designs in hydraulic presses, including the self-contained type, in which the pump and motor is an integral part of the press, no other hydraulic apparatus required.

Special presses or machines designed to suit your requirements.

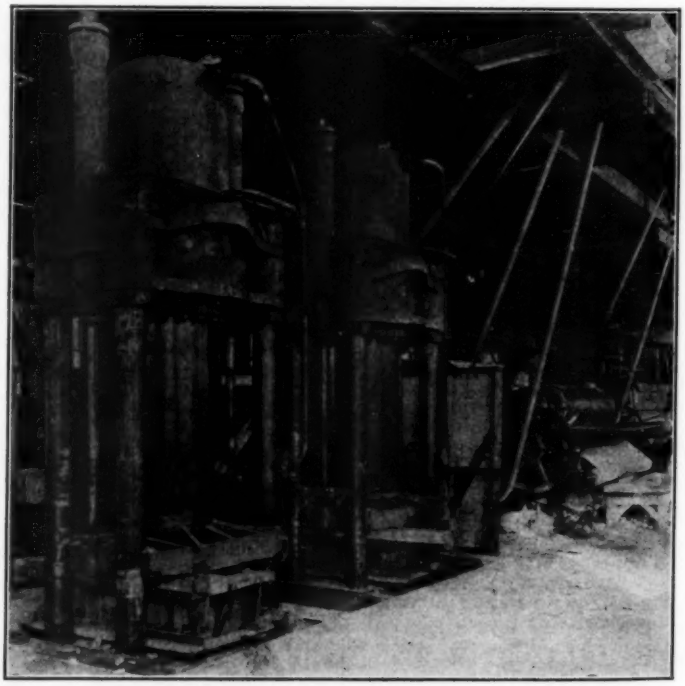
A complete line of pumps, accumulators, valves, fittings, etc., is carried in stock.

SOUTHWARK
Foundry and Machine Company

PHILADELPHIA, PA.

Swetland Building CLEVELAND

Fisher Building CHICAGO



Two 600 Ton Southwark Pulp Presses. Part of a Battery of Six Southwark Machines Installed at the Backus-Brooks Co., Kenora, Ontario

drums in this new process, which are divided transversely in halves by a sheet of the strong filter paper.

The visiting representative from the scorching western city told the Wrenn Paper Company that the filter sheets which they provided, that the paper was so strong that it outlasted the metal containers that surrounded it. In other words, the pressure of the water caused a bursting of the metal receptacles before it burst the sheets of filter paper, although the sheets are so thin that it requires 1,000 sheets to make a stack thirty inches high.

Filter paper is not the principal manufacture of the company, blotting paper being their chief product. Likewise, a porous material used in the manufacture of soft drinks is shipped in bulk, in barrels, from the plant of the Wrenn Paper Company.

Lawrence Bag Co. in Full Swing

Though the Lawrence Bag Company, which has recently been moved from Miamisburg, Ohio, to this city, is still in the midst of reorganization and remodelling its new plant on Grand Avenue, which was formerly owned by the Miami Cabinet Company, production has started and the plant will soon be working full force.

Many of the employees of the firm in Miamisburg have decided to move to this city so that it will be possible for them to continue with this company.

Production has already started on one of the most popular articles manufactured by them—the Backus Grey bag. This article is a best seller in the bag industry and a market for it extends over the entire United States. It is grey in color and of various sizes and designs. It is sold largely to grocers because of its strength, color and design.

The local company buys the paper for this bag from a mill located in International Falls, Minnesota. This concern, known as the Minnesota-Ontario Paper Company, has given the Lawrence Bag Company exclusive right to buy this particular paper for the production of the Bachus Grey.

Chemists' Assoc. Pres. Visits Middletown

Elon H. Hooker, of New York City, president of the Manufacturing Chemists' Association of the United States, stopped in Middletown recently while taking an auto tour through the middle west. He visited the Crystal Tissue Manufacturing Company, the Paul A. Sorg Paper Company and the Wardlow-Thomas Paper Company.

Hooker is founder of the Hooker Electrochemical Company, which is one of the greatest hydro-electric enterprises in the world. It is located at Niagara Falls, and Hooker was one of the first of the great American industrialists to take advantage of the Niagara waterpower development.

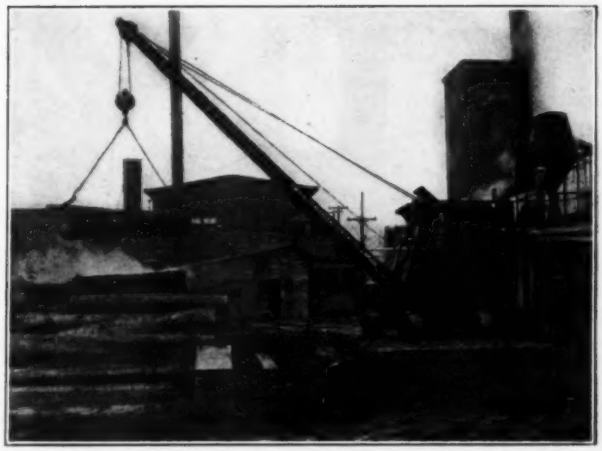
Hooker visited the manufacturing concerns in the middle west which use chemicals in their production and as head of the chemical interests of this country, he is planning for cooperation with the farmers in solution of some of their problems.

To facilitate greater speed in sending mail to large cities on the western coast of the United States, the Wrenn Paper Company, located on First Avenue, has taken the advantage of the air mail service and now sends all its western mail by this speedy method. Hitherto a period of five days were necessary for a western buyer to receive mail from this company, with the present method, the time period has been lowered to two days. From present knowledge this concern is the first one in Middletown to take advantage of this governmental service on so extensive a plan.

With the recent completion of the new warehouse the Wrenn Paper Company has been buying extensively in the rag markets of the world and have to date stored 100 tons of rags to be used in future production. This concern buys large quantities of rags from Egypt as well as Canada and Holland. Blankets stuffed with cotton are bought from the eastern cities of the United States.

A warehouse, 60x108 feet, has been completed for the Wrenn Paper Company, located on First Avenue and Water Street. The new building has two stories and is modern in construction, made of steel, concrete and brick. The company is now equipped with two storehouses with floor space of 12,960 feet.

Because of the former crowded conditions in the shipping department, the Nashua Gummed and Coated Paper Company, of this city, is increasing its shipping facilities by enlarging the shipping platform to accommodate the loading of five cars at one time, instead of two, as formerly.



TYPE T CRANE USED BY GOSHEN VENEER CO.

Specially Built to Suit the Capacity of Your Mill

The cost of handling pulpwood and logs is surprisingly low when you use a crane that is designed especially for your mill.

To buy a machine simply because the manufacturer builds only a certain size is poor economy. Our cranes range in capacity from 5 tons to 50 tons and are designed for handling small pulpwood with a grapple or single logs weighing up to 10 tons.

They are mounted for traveling on railroad track or on the ground surface and may be equipped with either electric, gasoline or steam power.

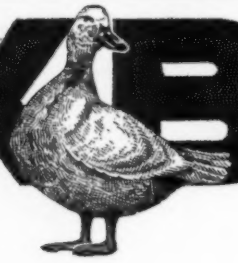
It will pay you to investigate. Our bulletin 241 is interesting and is sent free on application.

ORTON & STEINBRENNER

Crane Builders

608 S. Dearborn St. Chicago, Ill.

DUXBAK



LEATHER BELTING

efficient durable economical

an ideal belting for paper mill drives

—our series of "Quality Facts about Belting" tells you why Write for them

DUXBAK BELTING TRADE MARK

Thoroughly Waterproofed and Built for Service

Chas. A. Schieren Company

Tanners
Belt Manufacturers

73 FERRY STREET, NEW YORK

Branches and Distributors in All Leading Cities

BRANCHES

Atlanta	Boston	Cleveland
Denver	Philadelphia	Los Angeles
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Bristol, Tenn.	Detroit	

The Texas Chas. A. Schieren Co., Dallas, Tex.

Send for catalogue

FOURDRINIER WIRES

Dandy Rolls *Cylinder Molds*

Brass, Copper and Iron Cloth

Bank and Office Railings

WIRE SIGNS

Cheney Bigelow Wire Works

Established 1842 SPRINGFIELD, MASS.

Due to a general increase in the candy business the Nashua Gummed and Coated Paper Company has delivered three car loads of paper used to wrap candy kisses during the past week. All the "kiss" paper leaves the local plant in roll form.

Northern New York News

September 1, 1924.

Carlisle Buys Champion Mill

Floyd L. Carlisle, president of the St. Regis Paper Company, has purchased the controlling interest in the Champion Paper Company from Mark A. Hanna and Carl H. Hanna of Cleveland, Ohio. The Champion mill is located at Carthage. A recent meeting of the board of directors of the Champion company was held in New York. Mr. Carlisle has been elected president of the company in place of Mark A. Hanna. R. B. Maltby, who has been secretary and treasurer of the company, in addition, becomes vice-president, succeeding Carl H. Hanna. Clarence T. Wright, general manager, becomes assistant secretary and treasurer. In making the announcement, Mr. Carlisle says the sale was made to him individually and the deal has no connection with the St. Regis Paper Company.

The Champion Paper Company was organized in 1901, the property being purchased from M. P. Mason. The mill was built in 1902, a 132-inch machine being installed. The late James Outterson was the first president of the company and associated with him were H. J. Cadwell and H. V. Cadwell, Frank P. Wilder, Mark S. Wilder, A. R. Ball, L. G. DeCant and W. D. Ball. In 1904 H. J. Cadwell secured a controlling interest in the company. In 1916 he sold his interest to Mr. Outterson, J. B. Seaman of New York and G. N. Seaman of Chicago. Associated with Mr. Outterson in the purchase was the late Dan R. Hanna of Cleveland. Mr. Outterson retained his holdings but a few months when he sold. In 1918 Dan R. Hanna bought out the other stockholders and turned the stock over to his two sons, Mark A. and Carl H. Hanna.

The mill employs about 100 men and has a five-year contract with Montgomery Ward & Company of Chicago to supply it with catalogue paper.

West End Company to Make Specialty

Announcement is made by S. B. Wardwell, secretary and treasurer of the West End Paper Company of Carthage, that the West End Company will enter into the manufacture of high grade ground wood paper. Henry Smith of the Ryegate Paper Company of Ryegate, Vt., has been engaged as general manager and machinery is being made over to allow the manufacture of specialty paper. New calender rolls are being installed on the machines, doctors are being put on the calenders and the machinery is being generally overhauled. The mill has been making 40 tons of newsprint a day, and the same amount of specialty paper will be turned out.

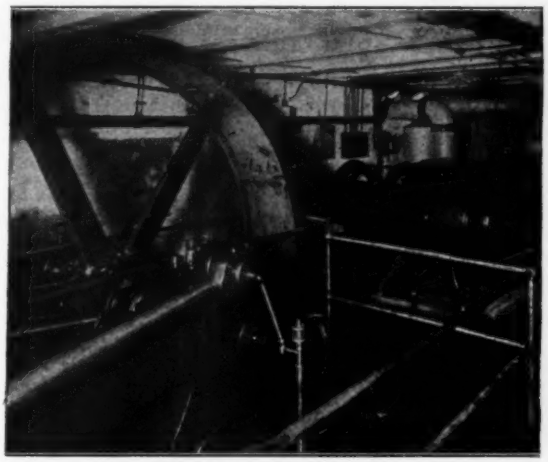
Prominent paper manufacturers of this section have for some time been predicting that within a few years all the mills in this section would give up the manufacture of newsprint, owing to the scarcity of pulpwood and would either turn to specialties or turn their plants over into hydro-electrical development plants. The International mills at Brownville and Glen Park are down. Knowlton Brothers have long been in the manufacture of specialties and the Sherman Paper Company is making high grades of paper. The only large mills in this district manufacturing newsprint are those of the St. Regis group.

Carey Case Before Supreme Court

After many months the famous Carey case has been submitted to Supreme Court Justice Edward N. Smith who hopes to have it reviewed at an early date, when he will give his decision. The action was brought by Former President Jeremiah T. Carey to prevent the International Brotherhood of Paper Makers from ousting him as president and seating First Vice-President M. H. Parker in that position. The election of officers took place last October, and Carey claims that on the first canvass he had a large majority, but that many votes were thrown out on the second canvass as being void, thus throwing the election to Parker. Early in February the case was tried before Justice Smith. Under a temporary injunction obtained by Carey, no person has been acting in the capacity of president. The position pays $5,000 a year and Mr. Carey has been president of the international brotherhood for 18 years.

By a vote of 616 to 89, members of the union in the United States and Canada voted in favor of a resolution adopted at the Buffalo convention requesting Justice Smith to set aside

The Lenix* Drive



Engine Driven 250 K. W. Generator
Engine Pulley 144 In. Dia., 27 In. Face, 100 R. P. M.
Generator Pulley 24 In. Dia., 29½ In. Face, 600 R. P. M.
PULLEY CENTERS, 12 FEET

OLD TIMERS

The mere fact that a thing is old is no criterion of its worth. But—when an old timer in any field continues to give satisfactory service after years of work its worth cannot be questioned.

The Lenix belt drive in the illustration is such an old timer. It has been in service **fourteen years**, and the owner says:

"We are pleased to advise that the Lenix drive which you installed for us in 1910 is still operating very satisfactory with the **original belt.**"

This quotation proves that contrary to a common impression the **Lenix is not hard on the belt** because the Lenix is not an idler. It is a "belt wrapper" scientifically applied to belt drives for the purpose of saving floor space, eliminating belt slippage, and increasing the capacity of the drive.

Send for booklet "Saving Slippage and Space"

F. L. SMIDTH & CO.

Engineers

50 Church St., New York, N. Y.

* Registered

"HILL CLUTCH"
MILL EQUIPMENT

Years of Service at Full Efficiency
— Not the First Cost
Is the dominant thought in the "Industrial Type" Gear Speed Transformer

Low Speed Side "Industrial Type" Speed Transformer

A nest of plain spur gears revolving in oil changes the revolutions per minute of the input shaft to some desired revolutions per minute of the output shaft. The power transmitted is the same in both shafts. The efficiency is higher than any other form of gearing.

It is the "short cut" from motor to machine or from shaft to shaft where speeds are widely different. It eliminates cumbersome speed changing devices and saves power losses.

The Hill Clutch Machine & Foundry Co.

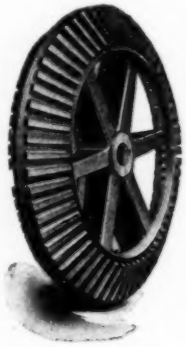
General Office and Works
CLEVELAND, OHIO

New York Office
50 Church St.

Machine Molded Gears

All Kinds, Types and Sizes

16,000 different fixtures to select from, thus saving pattern cost



Whether it is an ordinary spur gear or a mortise design such as the one shown, we have special machinery and unusual facilities for the rapid production of all kinds of gears.

Made by Improved machine moulding method.

A skilled organization of 81 years' experience.

A gear service unequalled.

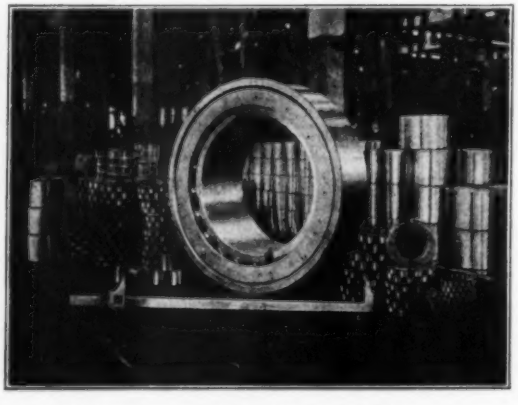
We have the most complete selection of Cast Gears of any manufacturer—Not a theoretical compilation, but patterns that are actually on hand ready for use.

Our Catalog will aid in your Gear problems

Poole Engineering and Machine Co.

BALTIMORE MARYLAND

THE HART BEARING



If you have bearing troubles we are prepared to help you. Nothing too large or difficult. Our bearings are standard and extensively used in paper machinery.

Let our engineers solve your problems.

The Orange Bearing Co.
ORANGE, N. J.

MORSE SILENT CHAIN DRIVES

150 *H. P. Morse Silent Chain driving Jordan engine*

Saves room and expense

In the plant shown, as in hundreds of other mills, Morse Silent Chain Drives are depended on for continuously transmitting 98.6% of the developed horsepower and thus for getting the utmost value from the driving motors.

The use of Morse drives permits beaters, Jordan engines, and other machines to be brought up close to the motors wherever desired, and thus secures the most convenient arrangement of machinery, saving valuable floor space. Morse drives permit any speed reduction in a single drive—for this reason less expensive standard high speed motors can often be used.

Morse Silent Chain cannot slip; they run quiet at all speeds and are sufficiently elastic and flexible to absorb or cushion all shocks due to sudden overloads.

Let the Morse Engineer give you complete information.

MORSE CHAIN COMPANY, ITHACA, N. Y.

There is a Morse Engineer near you

Baltimore, Md.
Atlanta, Ga.
Boston, Mass.
Charlotte, N. C.
Chicago, Ill.
Cleveland, Ohio
Denver, Colo.
Detroit, Mich.
New York City
Minneapolis, Minn.
Philadelphia, Pa.
Pittsburgh, Pa.
San Francisco, Cal.
St. Louis, Mo.
Winnipeg, Man., Can.

2179-30

the injunction. A similar resolution condemned Mr. Carey for invoking the power of an injunction.

Work on the Stillwater reservoir, which will supply water to a number of paper mills in this section, will be completed Feb. 1, 1925, so that the spring floods can be held back. Large amounts of standing timber are being removed from the area which is to be flooded, the state selling the pulpwood to Fred C. Pierce of Croghan for $5.05 a cord. Last spring 25,000 cords were cut, much of it being sold to the St. Regis Paper Company. Next spring it is expected that 15,000 more cords will be sent out. The dam is being constructed by the Black River regulating board, water power owners along the Beaver and Black rivers paying in proportion to the amount of benefit they receive.

Dan Hourigan, a marine broker of Oswego, acting for Quebec brokers, has met with obstacles in his effort to secure unloading rates from the Ontario and Western railroad in connection with a movement to bring ground wood pulp to Oswego from the lower St. Lawrence, to be transshipped out of Oswego by rail. Representatives of the O. & W. said that it would be impossible to quote a rate for unloading at Oswego because the company was tied up through an interstate tariff agreement with the Rutland-Lake Michigan Transit company which prohibited the quoting of a rate.

Negotiations are being made for the settlement of the two million dollar law suit brought by the present owners of the Newton Falls Paper Company against the officers of the company formerly owning it. Virgil K. Kellogg, one of the officers of the company, and attorney for the defendants, is conducting the negotiations. The plaintiffs claim that misrepresentations were made, especially as to the amount of standing timber which was included in the purchase about four years ago.

Newsprint production at the Glens Falls mills of the International Paper Company at Berlin, N. H., has been resumed according to an announcement by A. R. Graustein, president of the company. Operations were suspended at this plant during June. Resumption of operations at Berlin at about 70 percent of capacity will bring the total production of the International Paper Company to above 75 percent of normal. Canadian mills of the company are operated at capacity.

The International Paper Company has succeeded in bringing about a reduction of $30,600 on its properties in the towns of Pamelia and Brownville, Jefferson county. The three mills of the company in the two towns, were assessed at $592,000. The company asked for a reduction of $231,000.

R. S. Kellogg of New York, secretary of the Newsprint Service Bureau, was a recent speaker before the Ogdensburg Rotary club, giving a history of the paper industry.

The Taggart Brothers Paper Company of Watertown is installing a new generator capable of developing 125 horse power.

New York City News

September 2, 1924.

G. D. Bearce, engineer, and G. A. Ware, assistant-secretary of the Newsprint Service Bureau, left New York early in August for a visit to the newsprint mills on the Pacific Coast. Their first stop on the trip was the Grand Canyon, to proceed from there to San Francisco, where they will call at head offices and mills in that section. Portland, Ore., Seattle, Port Angeles and Vancouver will also be visited. Mr. Bearce and Mr. Ware expect to be in the West until about the middle of September. Mr. Bearce, on the trip, will interest himself especially in the new projects, new mill development, the fast machines and other matters of especial interest from a manufacturing standpoint.

John B. Johnston, ancillary receiver in New Jersey of the Gatti-McQuade Company, dealers in paper mill supplies of 200 Fifth Avenue, New York, recently filed his receivership report with Judge Runyon in the Federal Court at Newark, in which he set forth that receipts of the business since he took charge on September 16, 1922, were $151,698 and disbursements $139,832. The report was referred to Referee Charles M. Mason as special master to consider allowances of $5,000 to Mr Johnson to cover expenses, and $9,012 to Attorneys Furst & Furst for their services in connection with the case.

Exploded View of C-H Magnetic Clutch

On Synchronous Motor Drives

With the C-H Magnetic Clutch the load is picked up without jar. There is just enough slippage while the magnetic force is building up to reduce the shock of starting.

This clutch makes it possible also to employ a synchronous motor which, having practically no starting torque, is brought up to full speed before the clutch is engaged. This type of motor has advantages which make it desirable to use for raising the power factor of the electric system and reducing the power cost.

The C-H Magnetic Clutch requires small space and may be located below floors, in pits, overhead, or (since no attention is required) in inaccessible locations. Control stations may be located wherever convenient for attendants.

On a tissue paper machine drive a 30-inch C-H Magnet Clutch was installed on the floor below with control switch on the floor above. Production was increased and depreciation on felts greatly reduced. As a result all machines of this mill are equipped with these clutches.

At the Neenah Paper Co. mill a C-H Magnetic Clutch prevents the over-speeding of mill drive when the mill load is reduced or removed, the engagement and disengagement of which is controlled by a centrifugal governor.

The Northern Paper Co. uses two 66-inch clutches on magazine pulp grinders; Thilmany Pulp & Paper Co. has 16 on paper machine drives; The Frank Smith Paper Co. uses 7; Paper Converting Co. has 3 on paper machines and 4 on paper reel drives.

Let me mail you a copy of Publication 2030

THE CUTLER-HAMMER MFG. CO.

Magnet and Clutch Department

Works: MILWAUKEE *and* NEW YORK

Offices and Agents in Principal Cities

Northern Elec. Co., Ltd., Can.

C-H MAGNETIC CLUTCHES

"TOLEDO" No. 1A—

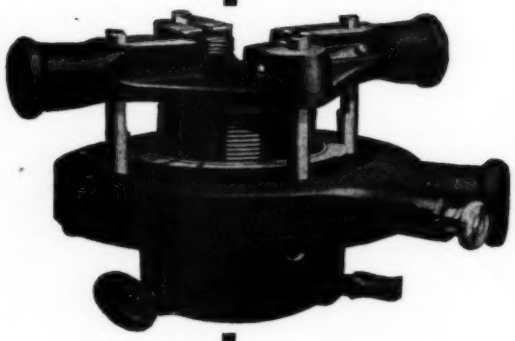
The 1″ to 2″ Threader that Reaches Every Corner Job

This "TOLEDO" No. 1A tool is an ideal pipe threader for the paper mill. It operates with a ratchet, works remarkably easy, and will reach the most inaccessible corner job.

It produces smooth, perfectly tapered threads that insure tight joints.

It has no complicated parts, is sturdily built, yet weighs less than 18 pounds as it is picked up and put on the pipe. It is a tool that will pay for itself in a short time about the mill.

Your jobber will tell you more about this tool of proven worth, or drop us a card for particulars and complete catalogue.



"TOLEDO"

THE TOLEDO PIPE THREADING MACHINE CO. TOLEDO, O.

New York Office, 50 Church St.

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich.

INTERNATIONAL TRADING CO., Philadelphia, Pa.

Eugene M. Strehl has resigned from the Strehl-Otens Company, box board distributers of 200 Fifth Avenue, New York, to rejoin the organization of the La Boiteaux Company, board dealers and distributers, with main offices in Cincinnati and branch offices in New York and other cities. Mr. Strehl will have charge of the New York office of the company, with which he was associated up to about five years ago when he organized his own concern. John A. Barbara, who has been in charge of the local branch, has rejoined the La Boiteaux organization in Cincinnati.

The Box Board Association is scheduled to hold a meeting in the Hotel Commodore in this city on September 8, at which will be present Secretary of Labor Davis and Commissioner of Labor Statistics Ethelbert Stewart to report on the accomplishments in connection with the five-day operating week of board mills.

Alfred Bunge, for many years a well known figure in the pulp and paper trade in the United States and in various European countries, has opened an office at 501 Fifth Avenue, New York, to conduct a mill agency in pulp and paper. Mr. Bunge will represent several American paper mills as well as sell foreign pulp to consumers in this country.

A petition in bankruptcy was filed on August 8 against the Rudolph Paper Company, jobbers, of 1350 Lafayette Avenue, New York, and afterwards Judge Knox appointed Clifford McChrystie receiver under $15,000 bond. Liabilities of the concern were placed at about $200,000 and assets at about $75,000.

A. Aaronson resigned a few days ago from the J. J. Murphy Paper Company, jobbers, to organize the firm of Aaronson Brothers, with offices and warehouse at 110 Greene Street, New York, to do a general jobbing business in paper. His brother, Ira N. Aaronson, is associated with him.

The Writing, Cover and Tissue Paper Manufacturers' Associations, of which Emmett Hay Naylor is secretary, moved their offices from New York to 44 Vernon Street, Springfield, Mass., on August 1. A New York office will be maintained at 18 East Forty-first Street, as heretofore.

James Carrano's Sons, among the largest packers of waste paper in the metropolitan district, operating a warehouse at 563 Water Street, New York, has been incorporated under New York State laws with a capital of $30,000. The incorporators were J. V. and M. and N. R. Carrano.

A. J. Feiler, of the Scandinavian Pulp Agency, Inc., 342 Madison Avenue, New York, sailed on August 20 for a business trip to Europe. He will visit the Scandinavian countries and elsewhere in England and on the Continent.

Ralph Bretzner, vice-president of the American Baltic Corporation, wood pulp importers of 10 East Forty-third Street, New York, sailed for Europe early in August to be abroad about six weeks.

The A. B. Massa Paper Company, mill agents, has removed its offices from Room 703 in the Columbia Trust Building at 358 Fifth Avenue, New York, to more commodius quarters in Suite 1001-2 in the same building.

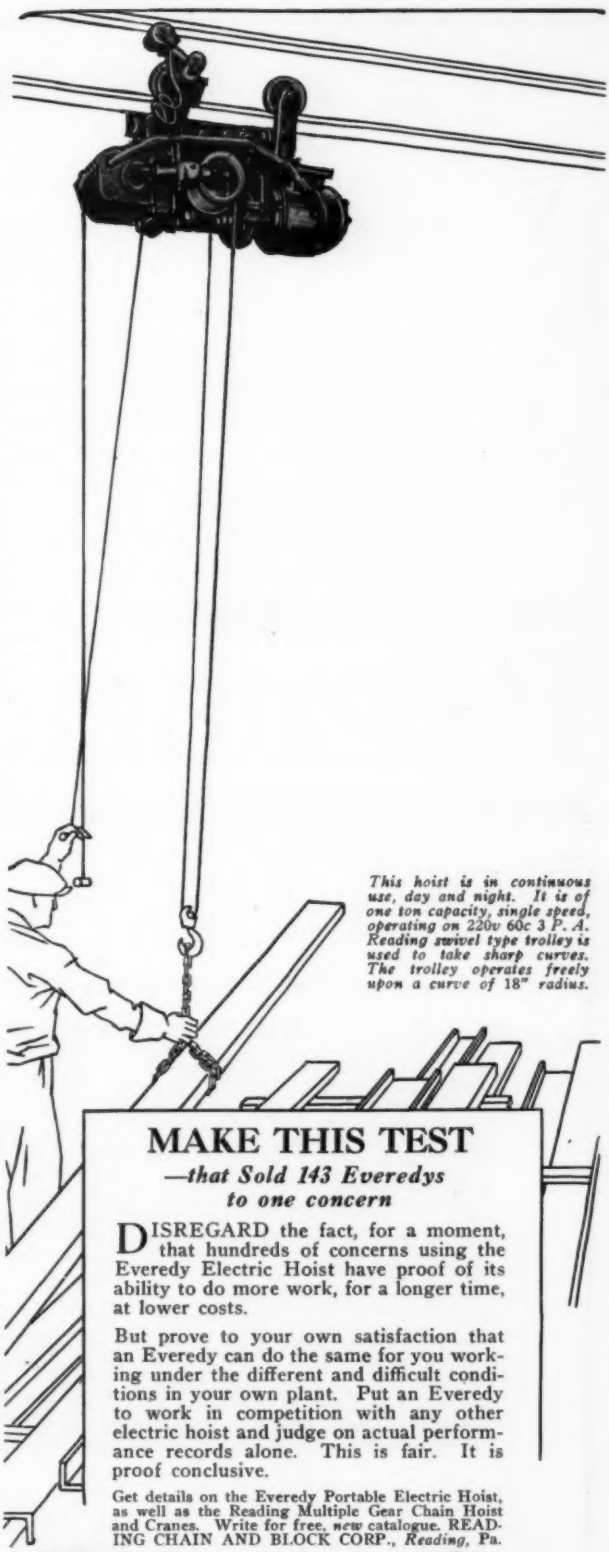
Walter R. Hicks, of Daniel M. Hicks, Inc., importers of and dealers in paper mill supplies of 200 Fifth Avenue, New York, spent most of August on a vacation at Shelter Island, N. Y.

E. J. Keller, of the E. J. Keller Company, Inc., 200 Fifth Avenue, New York, sailed on August 12 for a several months' business trip to Europe.

Carleton B. Overton, of Castle & Overton, Inc., 200 Fifth Avenue, New York, left on the steamer Reliance, August 19, for a two months' business trip to Europe.

Roswell W. Goils has opened an office at 225 Fifth Avenue, New York, to represent W. E. Wroe & Company, of Chicago.

I. S. Reynolds has resigned his position with Mead, Patton & Company, Inc., pulp importers of 366 Madison Avenue, New York.



This hoist is in continuous use, day and night. It is of one ton capacity, single speed, operating on 220v 60c 3 P. A. Reading swivel type trolley is used to take sharp curves. The trolley operates freely upon a curve of 18" radius.

MAKE THIS TEST

—that Sold 143 Everedys to one concern

DISREGARD the fact, for a moment, that hundreds of concerns using the Everedy Electric Hoist have proof of its ability to do more work, for a longer time, at lower costs.

But prove to your own satisfaction that an Everedy can do the same for you working under the different and difficult conditions in your own plant. Put an Everedy to work in competition with any other electric hoist and judge on actual performance records alone. This is fair. It is proof conclusive.

Get details on the Everedy Portable Electric Hoist, as well as the Reading Multiple Gear Chain Hoist and Cranes. Write for free, *new* catalogue. READING CHAIN AND BLOCK CORP., *Reading*, Pa.

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ELECTRIC HOIST »» *Multiplies Man Power*

THE REPUBLIC RUBBER CO. YOUNGSTOWN-OHIO

Paper mills have the heated damp rooms—the cold damp rooms—the Jordon Engine—the beater—all peculiar to the industry.

The Republic Rubber Company studied these conditions and developed Republic Double Cross and Invader Belts for this kind of service. The Republic Rubber Company recommends these belts for economy and for the peace of mind of the mill operator.

THE REPUBLIC RUBBER COMPANY
Youngstown, Ohio

REPUBLIC BELTING

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

William Seicen

William Seicen, a member of the staff of the J. E. Linde Paper Company, jobbers of 88 Beekman Street, New York, died suddenly of heart trouble while at his desk in the Linde offices on August 15. He was 42 years of age, and lived at 62 Washington Street, Hoboken, N. J.

Simon Miller

Simon Miller, junior member of the firm of Joseph & Miller, dealers in cotton cuttings of 449 Water Street, New York, and well known among paper manufacturers, died suddenly at Rockaway Park, Long Island, on July 29. Mr. Miller was about 45 years old, and resided at 1815 Seventh Avenue, New York.

New England News

September 1, 1924.

Victory in Pulpwood Case

Probably the most helpful victory Maine paper mills have won in their constant disputes with the railroads has just been announced in the form of a decision of the Maine Public Utilities Commission. It will be recalled that a drastic rate advance on pulpwood was put into effect over its lines last February 5 by the Maine Central RR. Maine mills are tremendous pulpwood users, practically all of them producing their own pulp, and with the exception of one mill which uses a small amount of rag stock, pulp wood is the basic raw material for all Maine made paper.

The February advance culminated a long series of increases. It was bitterly opposed by every interested Maine mill individually and collectively through the New England Paper & Pulp Traffic Association. The rates being in most cases intrastate, the case came before the Maine Commission at Augusta.

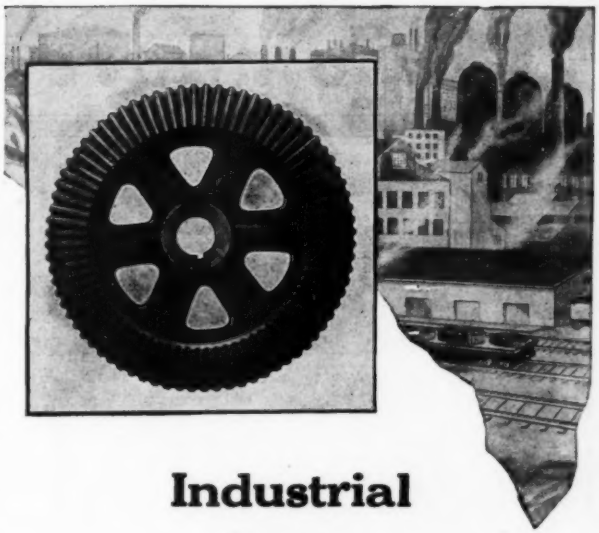
The decision of the Maine Commission finds the rates unreasonably high. They prescribe a scale that must be immediately published, of which many are the same as those prevailing prior to the February advance, while many are advanced but one-half cent per rate. The mileage scale is extended to the Washington county division and full reparation between the rates paid and those ordered is granted by the Commission. Because of the import character of the tonnage, and the fact that it moves in solid trainloads, the Maine Commission differentiates reasonable rates from Portland ex-water (from Maritime Provinces by schooner) to Livermore Falls and to Rumford of $2.20 and $2.40 per cord respectively. In the matter of refund on the shipments originating on points of the Maine Central east of Washington junction to points west thereof, the rates that were legally applicable prior to February 5th shall govern.

The most important movement of pulpwood is in fact from tidewater at Portland, Bath and other ports to interior mills on wood brought by boat from Canada. The rail hauls in these cases are comparatively short and it is on the shorter distances that the biggest reductions accrue.

The rate situation therefore up to 150 miles is as follows: For any distance not over 20 miles, the new rate is 4c, prior to February 5th it was 3½c and the recent rate was 5c; not exceeding 30 miles new rate 4½c, old rate 5½c; not over 40 miles new rate 5½c, old rate 6c; not over 50 miles new rate 6c, old rate 6½c; not over 75 miles new rate 7c, old rate 7½c; not over 90 miles new rate 7c, old rate 7½c; not over 100 miles new rate 7½c, old rate 8c; not over 120 miles new rate 8c, old rate 8½c; not over 140 miles new rate 8½c, old rate 9c. These tariffs are in cents per hundred pounds.

Strike Successfully Settled

A conspicuous instance of courage in the face of union intimidation has been furnished the trade by the Parker Young Co., of Boston, with mills at Lincoln and Livermore Falls, N. H. This company is managed by Mr. Martin Brown, a gentleman known through the industry as possessed of determination. Therefore when the news was flashed to him two months ago on his arrival at New York from Europe that the employes of his mills had gone on a strike against a reduction of 5c per hour in wages, he firmly determined to see the thing through in conspicuous fashion. Since the International Paper Co. successfully waged its fight against the Paper Makers union two years ago, no New England paper company has forced the wage issue with much success. The mills of the Parker Young Co. were manned by union employes. Annually about the first of July, the union representatives and the company negotiated a wage agreement for



Industrial Gears

For fifty-four years Ganschow has been making gears for all industrial purposes, not ordinary gears—for no Ganschow Gear is ordinary—but correctly designed and honestly made gears such as specialists only can make.

Each gear is marked for easy re-order and bears the date of manufacture so that you can check its period of usefulness against others.

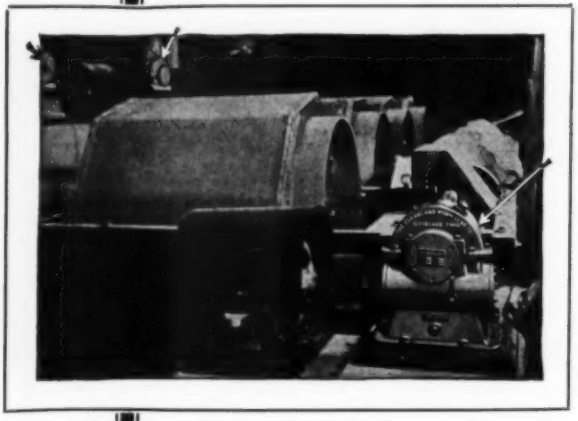
Ganschow facilities are unlimited and Ganschow service is prompt. Give us an opportunity to quote on your requirements.

William Ganschow Co.

1015 Washington Blvd. MEMBER OF AGMA Chicago Illinois

Cut Gears and Speed Transformers

Compare—then Decide



Pulp Thickener in Paper Mill, Motor 3 H.P., 860 R.P.M. Reduction in CLEVELAND Worm Gear Speed Reduction Unit 32 to 1.

A single CLEVELAND unit is used containing only 2 Gears—4 Bearings—1 Gear Contact.

A spur gear speed reducer, to perform a similar duty, would require 16 gears—17 bearings—12 gear contacts.

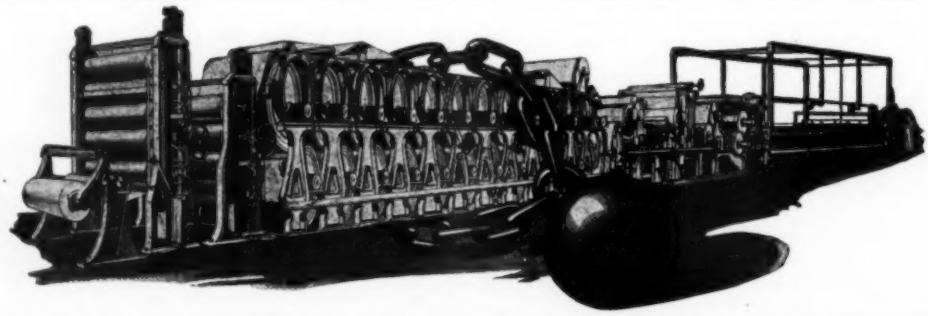
This simplicity not only means a more trouble-proof unit, but Longer Life, Lower Maintenance and Less Space Required.

Compare and you will buy CLEVELANDS

The Cleveland Worm & Gear Co.

"America's Pioneers in Worm Gearing"

Payne Avenue CLEVELAND, OHIO



TAKE OFF THE SHACKLES!

Nothing ties up a Fourdrinier Machine so completely as a faulty Fourdrinier Wire.

Time lost in making wire repairs or replacements, cuts down the production hours of the entire mill.

Men, equipment, buildings, and power, all become non-producers—an investment of hundreds of thousands of dollars stops earning profits.

Why handicap your mill by using any but the best Fourdrinier Wires obtainable? The increased production; the improved quality of paper; the increased return on your investment, make it extremely profitable.

Tyler Fourdrinier Wires have an earned reputation for dependability in operation; for accuracy of mesh; firm, uniform weaving; and a smooth, faultless surface.

Let us send you samples so that you may judge at first hand of the quality of Tyler Fourdrinier Wires.

THE W. S. TYLER COMPANY, *Cleveland, Ohio*

TYLER FOURDRINIER WIRES

CYLINDER WIRES BACKING WIRES WASHER WIRES CORDUROY WIRE CLOTH HUM-MER ELECTRIC SCREENS

the ensuing year. About the first of January, 1923, the company had voluntarily increased wages 5c hourly to all employes. It was a period of good business that in the company's opinion justified the move.

In the opinion of officials, however, the business period preceding July 1 did not warrant the continuance of this scale. There was no question of discontinuing union recognition, however. When the union leaders refused the reduction and struck, the company declared for the open shop. This protracted the struggle, for the men later offered to accept the reduction providing the closed shop principle was maintained.

We are just in receipt of word, however, that the company's complete terms have been accepted by the men by a substantial majority vote. Prior to this acceptance, the aid of outside help was obtained and two machines of the company had been brought into part time operation. This week it is understood the mills were to go on full time operations.

It is a matter of gratification to learn that the New England railroads, without fuss are to grant a right to the paper industry of New England for which it has long contended. That is in the matter of carload minimum weights. Although at this writing the matter has not been officially docketed, we are reliably informed that the New England Freight Association will shortly hold perfunctory hearings to be followed by the issuance of a new carload minimum of 36,000 pounds on newsprint, wrapping and printing paper within New England, a reduction from the present .001 of 40,000 lbs. for a standard box car. This move is in pleasing contrast to the recent effort on the part of the Boston & Maine railroad to reduce its carload minimum on tissue paper which would have blasted the New England tissue paper industry out of existence in competition with New York state producers. This was successfully fought off after a hearing in Boston.

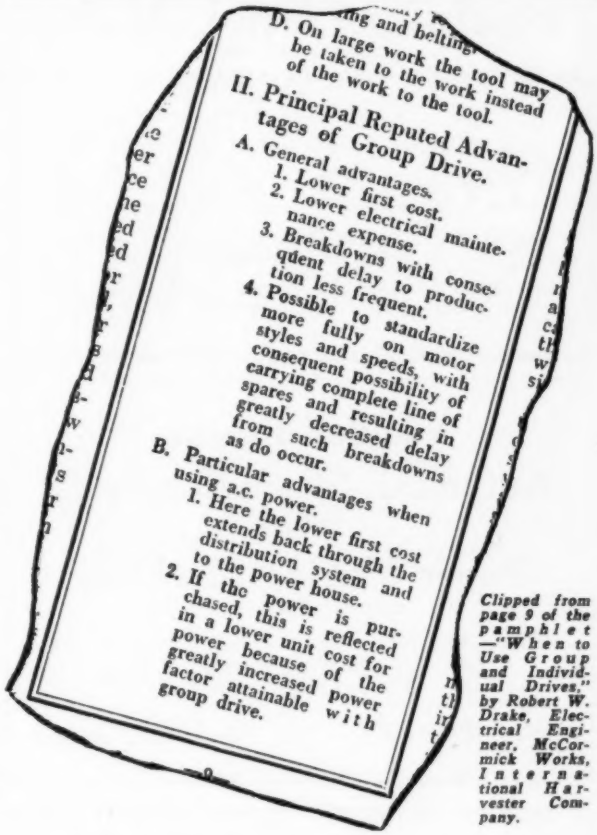
The Bath Iron Works, Ltd., of Bath, Me., after lengthy proceedings, were brought to receivership through the efforts of the bondholders' committee represented by the Merrill Trust Co., of Bangor, Me. The receivers include former William T. Cobb of Rockland, James C. Boyd of Portland, and George C. Wing, Jr., of Auburn. Receivers have been authorized by the company to complete all outstanding contracts and subject to approval of the court to accept new business. In a recent test case of this latter phase the court permitted the company to accept important business. There had been some question in the trade whether the company would be allowed to solicit additional orders for its famous Warren Magazine Grinder and other products. These questions have been settled by the recent decision in the affirmative.

One of the most important timberland transactions of the past two years has just been consummated by the Hollingsworth & Whitney Co., of Boston, who have practically doubled their holdings of timberland in Maine. They have acquired some 280,000 acres of Nova Scotia lands formerly owned by the Fraser Pulp & Paper Co. The lands are located in Halifax, Colchester and Guysboro counties. Most of this land together with that previously purchased, lies within a comparatively easy haul of tidewater, whence it will be most convenient to move it direct to the pulp mills which, it is thought, the company may build in the future at the mouth of the St. Croix River either at St. Stephen, N. B., or Calais, Me.

A fire in the stock shed of the Hollingsworth & Vose Co., at East Walpole, Mass., on August 10, nearly caused a tragic loss of life when three chlorine tanks exploded. One of the tanks was blown through the roof, landing in a field 200 feet away. Fumes released by the explosion swept across a large adjoining garden acreage, killing all vegetation. The fire started from spontaneous combustion. The mill was closed at the time, although a gang of 40 men were overhauling some of the machinery. The damage has been nearly all repaired and new tanks installed. The mill has continued uninterrupted operations.

F. A. Gilbert, vice-president and general manager of the Great Northern Paper Co., announces the program for the company's woods operations during the coming season. It will include 110,000 cords of wood, all to be cut on company lands in Maine. The operations follow: On the Kennebec, Spencer Pond, 10,000 cords; William stream, 10,000 cords; on the west branch of the Penobscot, Lobster operation, 4,000 cords. Railroad operations, E. J. Briggs, contractor, 20,000 cords; Ashland, 40,000 cords; Grindstone, 20,000 cords; Browntown, 7,000 cords; and miscellaneous, 1,000 cords.

"LEATHER LASTS LONGER"



D. On large work the tool may be taken to the work instead of the work to the tool.

II. Principal Reputed Advantages of Group Drive.

A. General advantages.
1. Lower first cost.
2. Lower electrical maintenance expense.
3. Breakdowns with consequent delay to production less frequent.
4. Possible to standardize more fully on motor styles and speeds, with consequent possibility of carrying complete line of spares and resulting in greatly decreased delay from such breakdowns as do occur.

B. Particular advantages when using a.c. power.
1. Here the lower first cost extends back through the distribution system and to the power house.
2. If the power is purchased, this is reflected in a lower unit cost for power because of the greatly increased power factor attainable with group drive.

Clipped from page 9 of the pamphlet —"When to Use Group and Individual Drives," by Robert W. Drake, Electrical Engineer, McCormick Works, International Harvester Company.

THE pamphlet from which the above clipping was taken should be in the working library of every plant owner, engineer, plant superintendent and purchasing agent whose objective is increased production, lower operating and maintenance costs, decreased power losses, and reduction of wear and tear on belting and equipment.

Mr. Drake's articles form a welcome addition to a subject upon which very little authoritative data has been available.

Send today for a copy of the pamphlet containing them. It is FREE—Perhaps Mr. Drake has solved your drive problem.

LEATHER BELTING EXCHANGE, Philadelphia, Pa.

Nothing takes the place of

LEATHER

LEATHER BELTING EXCHANGE, 8
417 Forrest Building, Philadelphia, Pa.
Send me a copy of the pamphlet containing the articles by Mr. Robert W. Drake.

Name .....
Firm .....
Address .....
City ..... *State* .....

Fitchburg Duck Mills

ESTABLISHED 1844

FITCHBURG, MASS.

MANUFACTURERS OF

STANDARD AND MULTIPLE PLY

DRYER FELTS

English Weave in Two, Three, Four, Five and Six Ply—60 Inches to 176 Inches in Width

Fine Faced Felts for Fine Papers. Absolutely no felt marks in paper. TRIUNE Three Ply Felts for Coarse Papers.

Pickles' Patent Automatic Steam Regulator

FOR

Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

LOCKPORT Felts

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Paper Makers' Felts

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Ask the Men Who Run Them

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Represent the latest improvements. They are made to lie flat on the wire and run straight.

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The Rubber Roll Makers

NEWTON UPPER FALLS, MASS., U. S. A.

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SKANEATELES FALLS

New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

Bird & Son, Inc., East Walpole, Mass., paper makers, announce the redemption of their entire outstanding ten-year six percent notes, due in 1929. There were $1,000,000 of these notes originally outstanding, of which but $465,000 remain. The notes are redeemed at 101 and interest. This is a fair indication of the company's excellent business recovery from the postwar depression and their present financial condition.

Improvements to the power plant of the Haverhill, Mass., division of the Robert Gair Co. are understood to have enabled the company to develop greater power for peak loads. During its period of idleness the first fortnight of August the company also made improvements to its board machine, increasing its potential output.

The Uncas Paper Board Co. of Norwich, Conn., which has been steadily aiming towards greater production of folding boxboard, is now making changes to its No. 1 machine with that end in view.

After a lengthy closing the Glen mills of the International Paper Co. at Berlin, N. H., were re-opened during the past month at 70 percent of capacity. This is gradually being increased and nearly 100 percent operations are expected soon.

Another indicator of fairly prosperous conditions is the call for redemption of a substantial part of their first mortgage seven percent bonds by the Poland Paper Co. of Mechanic Falls, Me.

Foreign Correspondence

Report of Paper Trade Situation in Great Britain

Trade has fallen away very considerably during this month and every section of the paper making industry has been affected. July was not a particularly bad month for trade although it was marked by the usual summer slackness. August is customarily reckoned as the worst month of the year but judging by reports the current month has been exceptionally quiet.

It is regarded as probable that the first effect of the Dawes scheme will be an increased export of German paper and greater efforts on the part of German paper makers. To a large extent the position will be modified by increased taxation, higher costs of production and imposition of export duties.

"The Times Trade Supplement," commenting on the situation, says:

"With regard to trade conditions at the mills here, as usual the newsprint section is well supplied with orders; at the same time overseas export and the Colonial demand have slightly diminished in volume, while Dominion and foreign competition in newsprint is becoming increasingly severe. During the first six months of the year there has been a decline of 4,000 cwt. in exports of printings to Australia, of 20,000 cwt. in the case of South Africa, and 27,000 cwt. in the case of British India. On the other hand there has been an increased export to foreign countries and the smaller Colonial markets.

"It is interesting to note that the productive capacity of the English newsprint mills is in the region of 50,000 tons per month. Exports of newsprint alone, excluding printing in sheets, approximate to 6,500 tons monthly, while imports average somewhere near 4,500 tons per month.

Business in Esparto

"In the esparto section business is fairly good, but there are fewer orders on the books than there were in the early part of the year. The home demand, of course, reflects the general state of trade at the moment, and a heavier volume of requirement is expected at the close of the month. Prices are firm, with a slightly hardening tendency in some directions."

For several years past the Master Printers' Federation has been endeavoring to secure the coöperation of paper makers and merchants in putting into force the scheme of paper standards adopted by the successive conferences of master printers. The proposal is to abolish the quire and the ream and replace them by the mille, which is simply a 1000 sheet ream made up in convenient packets of 500, 250, or 100. Boards would be sold per thousand instead of per gross, and would be specified as to thickness or substance by numerals representing thousandths of an inch or the nearest agreed unit. Paper sizes would also be of set dimensions.

The proposition with which paper merchants are now faced is that many of the leading printers have decided to deal

New Sand Filter

A SPECIAL filter for paper mills, producing all the results the paper manufacturer desires. It is a modification of the well known Hungerford filter adapted to paper mill use. It is constructed of concrete, strictly wrought iron pipe, brass strainers and especially prepared silica sand. It is as durable and efficient as can be built at any cost. It can be sold at a very low figure.

This filter gives perfectly clear water, washes thoroughly, does not require renewal of the sand bed, is absolutely reliable in the performance of its duty and requires a minimum amount of attention.

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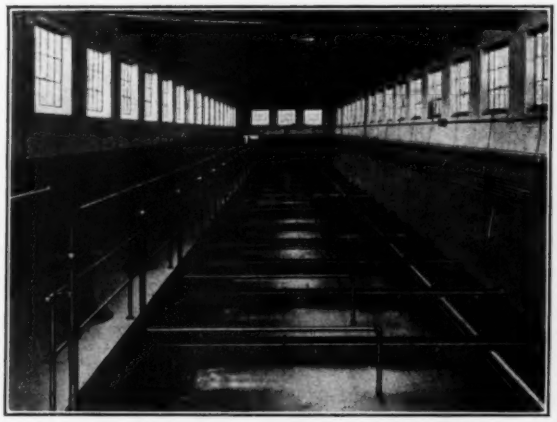

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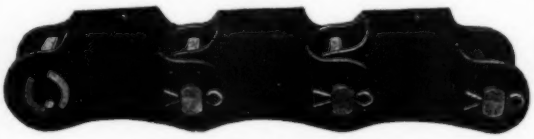

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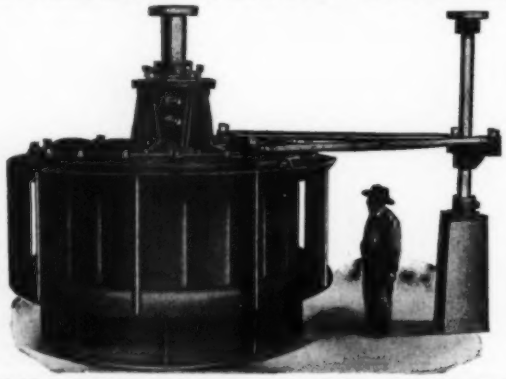

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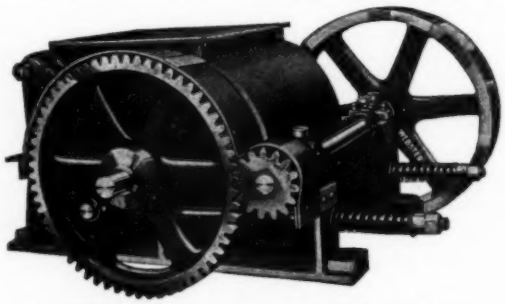

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mainly with paper houses who adopt the new standards. Exactly how this decision will be put into practice is not yet clear. Paper merchants must inevitably carry stock both ways in order to meet the requirements of those customers who desire standard papers and those who do not. The advantages of standardization cannot be disputed, and each section of the allied industry will reap its benefits in the end. The difficulty is to inaugurate the movement and get smoothly.

Paper-carrying Ship Launched at Barrow, England

The Hon. Mrs. Esmond Harmsworth, wife of Mr. Esmond Harmsworth, member of Parliament for Thanet, Kent, christened at Vicker's Naval Construction Works at Barrow on August 20, the steamship "Geraldine Mary," designed and built to bring paper from "The Daily Mail" and "The Daily Mirror" paper mills in Newfoundland.

The ship is named after Mrs. Harmsworth, mother of the late Lord Northcliffe and of Lord Rothermere, whose brothers, Mr. Cecil Harmsworth and Mr. Vivian Harmsworth, were among the guests.

Built to the order of the Anglo-Newfoundland Development Company, the "Geraldine Mary" is 422 feet long, 9,000 tons dead weight, and has a sea speed of 11 knots. She can burn either coal or oil fuel and is specially strengthened for breaking through the ice off the coast of Newfoundland.

A single screw cargo steamer, she was built by Messrs. Vickers, Ltd., one of the biggest engineering organizations in Great Britan, from whose works at Barrow-in-Furness she was launched. The vessel has been specially designed for the carriage of paper in rolls, and the depth of holds and 'tween decks arranged to give a minimnm waste space. She is built to Lloyd's highest requirements and to their special survey, and is specially strengthened and construced for encountering ice. The fore-end of the vessel is specially formed for ice breaking purposes.

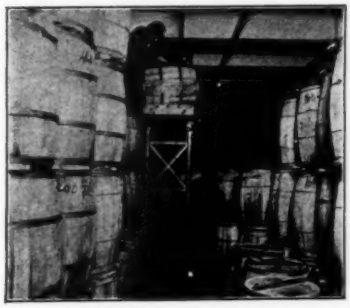
Sir Andrew Caird represented the owners at the launching.

Paper Industry in Germany

Since the introduction of stable money, viz., the Goldmark, business in the paper as well as cellulose industry, has been very unsatisfactory. Export has become practically impossible on account of too high prices compared with the international ones. There are many causes such as too expensive coal, high freight rates, unheard of high taxes. Besides the post-war laws demand that workers have to work in three shifts every 24 hours, thus many more have to be employed than otherwise, thus the finished product becomes rather dear. If there is any exporting at all, it is done with a loss. This year the first quarter was a very bad one. Then followed a small reviving as the exhausted staple goods had to be filled. Now the business is unsatisfactory again. The workers are demanding higher wages, since the rents have increased nearly every month from the beginning of the year. Prices of straw, wood and other raw material have risen considerably. Besides the occupied zone does not count as consumer, the French and Belgian competition being too severe.

In the middle of the summer the yearly conference of the paper makers took place, where the above unpleasant circumstances were widely discussed. It was reported that Great Britain imports much paper from Canada, at a price at which Germans cannot compete. Thus London may again become the Central buying market for all European countries and perhaps oversea nations. For she has the chance of organizing in a comprehensive way the mediation of the sales. The German firms fear that their business with South America will suffer by it. Prior to the war the German factories produced twice as much printing paper for newspapers than could be consumed at home, thus every year 250,000 to 300,000 tons had to be sent abroad. This is still the case, with the difference however, that the overproduction if there were one, would not find buyers abroad.

For there is a great scarcity of capital in other countries, too, especially in South America which has been the best consumer since many years, especially as regards paper for the press. Nearly the same is true as regards Eastern Asia. Our firms cannot possibly grant credit to foreign customers, thus they must reject many a profitable order. The factories cannot be utilized to their full extent, which renders the production process more expensive. The procuring of wood has become so dear here that most firms being located near the Eastern and Northern frontier prefer to import Scandinavian wood or pulp, etc., than home made. Besides it is impossible for German firms to sell cellulose to England.



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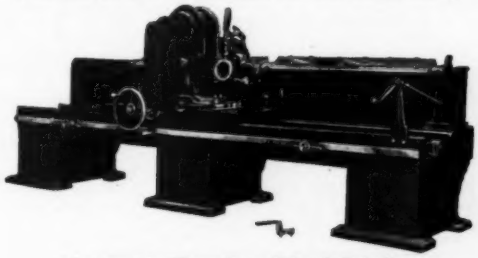
For Knives 26 inches to 19 feet long



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Full automatic, semi-automatic and hand machines.

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Belt or motor drive.

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Baetz Patent **HEATING SYSTEM**
When Winter Comes Heating Troubles Multiply Over Night in Paper Mills

The mighty blasts of winter continually sweep through the mill factory and industrial plant during the winter, without warning, and severely penalize the heating equipment that is not builded to resist such pressure. Invariably the greatest difficulties arise in heating equipment that is not scientifically builded for the purpose in which it is used. Engineers and superintendents know very well that it is a physical impossibility to attempt to keep up producton when a condition of this kind exists.

Skinner Heaters Eliminate Steam, Vapor and Excessive Moisture

Skinner Heaters are individual compact units; they heat and ventilate and can be adapted to practically any type of air conditioning service; constructed in the floor type and the inverted type for overhead suspension. They are effective because of their simple, scientific construction. Heaters are particularly adapted for steam and vapor removal in paper mill machine and beater rooms. Their installation guarantees prevention and condensation of drippage and excessive moisture. No outside pipes or ducts are used for air distribution. Fan operated by any power available. Use live or exhaust steam at high or low pressure. They are portable and can be moved from one place to another. Completely assembled before shipment. Easy to install, most economical to operate and the maintenance cost is exceptionally low.

Skinner Heaters Are Used by These Well Known Mills

Crocker-Burbank Co., Certainteed Products Corp., International Paper Co., Mt. Vernon Strawboard Co., Terre Haute Paper Co., American Paper Products Co., Fairfield Paper Co., New York and Pennsylvania Co., Castanea Paper Co., Dresden Paper Co., J. Strange Paper Co., Auglaize Box Co., Adams Paper Co., Bulis Mfg. Co., United Paperboard Company—Installations in 12 branch mills.

Skinner Bros. Manufacturing Co., Inc.
Sole and exclusive manufacturers of Skinner Bros. Baetz Patent Heaters and Skinner Bros. Patented Direct Fired Heaters
Home Office and Factory, 1434 S. Vandeventer Ave., St. Louis, Mo.
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Steam Coil Type S. C. uses live or exhaust steam at any pressure. Where steam is not available we furnish Direct-Fired Type D. F., which burns coal, coke, wood, gas or oil.

Many hundreds of leading factories, of every type, in the United States and Canada, are users of Skinner Heaters, and they know what it means to heat best and cost less.

Paper Situation in Switzerland

The restriction of exports and voluntary diminishing of the home production has had a favorable influence upon the general situation. During 1923 the imports exceeded those of 1922 and almost reached the pre-war level.

At present about seventeen concerns deal with the making of paper and produce 800,000 tons per year, while the demand in the past period was not more than 50,000 tons a year. In normal times the home consumption in Switzerland is about 65,000 tons, of which 10,000 are imported. Thus the mills are compelled to export a considerable quantity which is, however, difficult owing to high costs of production. The chief buyers of Swiss paper are France, which purchased 8,000 tons last year while the United States bought only the small amount of 65 tons. The import of fibrous, viz., mechanically spun material rose from 533 tons in 1922 to 1,515 tons last year, the imports of cellulose from 2,861 tons to 6,167 within that period, of printing and writing paper from 1,880 to 3,426 tons.

Situation in Italy

The position of the Italian paper mills had much to suffer through the imports from cheaply producing nations last year, such as Germany and Austria. Many concerns had to sell below cost. Eighty to 90 percent of the whole demand for printing paper is being imported from Germany, for instance during 1923 24,247,400 kilogram paper and 16,400,000 kg. pulp, also 2,670,000 kg. free as reparation goods. In 1923, Italy purchased from Germany alone paper and papergoods to the value of 72 millions Lire, besides from England a fair amount of paper for technical purposes. The domestic production could be much increased if all factories could be kept busy, but there is a scarcity of raw materials, and it has been found cheaper to import the finished goods. It is intended to make trials with Esparto grass from Tunis. Drawing paper was formerly imported exclusively from France, but is now made at home. In the paper and cardboard industry there were in Italy 13 limited companies with 26 millions capital, 1922 there were 26 concerns, and 1923 45, producing 81,800,000 kilograms of paper.

Safety Council to Meet at Louisville

The Thirteenth Annual Safety Congress of the National Safety Council will meet in Louisville September 29 to October 3. What has happened in safety during the past year will be the keynote of the meeting.

The story of progress will be related by speakers of national and international prominence, will be shown vividly by exhibits, motion picture films and lantern slides and will be demonstrated in the daily sectional sessions and general sessions of the Congress. The Council will exhibit its new industrial safety film which is being produced at a cost of $10,000 and from six to ten other films dealing with safety in industry.

More than 4,000 industrial plants, and Community Safety Councils in 60 American cities, members of the National Safety Council, will be represented at the Congress. Indicative of increased safety activities and safety interest by industries is the increase in the membership of the National Safety Council. The membership is now the largest since the Council was founded 12 years ago.

The Paper and Pulp section will hold its sessions in the mornings of Tuesday and Wednesday, September 30 and October 1. Following reports of the officers and committees, addresses will be given by Dr. Louis Frechling and Charles Ludwig.

It is probable Secretary of Commerce Herbert Hoover and Secretary of Labor James J. Davis will speak at the Congress.

The Power and Potence of a Piece of Paper

At a recent convention of paper manufacturers, a prominent paper maker was called upon to define the power and potence of a piece of paper—that is, the important uses a scrap of paper can perform, and the dignity and respect it can command. He responded in substance as follows:

"When you come to think of it, nearly as much can be accomplished today with a mere sheet of paper, as the magician of old could encompass with all his charms and amulets and touchstones.

"For a scrap of paper can be made into a check which will be honored by men in both high and low places, and which will convey a fortune to the furthermost parts of the earth. It can be made into a deed which will transfer the possession of an enormous property. It can bring both great sorrow and great joy to a mortal, for upon it a warrant of arrest can be written; or a pardon. The musician can compose upon it a song that will cheer the hearts of millions, and which will be handed down to subsequent and countless generations, and which will live long after its composer's name and personality is swallowed up by ages. Or a poet can write upon it a verse which will be passed on for the unborn to muse and sing.

"Yes, a piece of paper can be made into an all-powerful instrument; it can carry the ultimatum of kings; upon its face can be written an order which will clash together mighty armies and cause unfathomed suffering and untold bloodshed and death; a mere piece of paper can cause the whole world to mourn; a mere scrap of paper can be made the innocent agent of destruction which it will take many, many long years to repair.

"Truly, paper is a magic carpet and an Aladdin's lamp and a fairy scepter all rolled into one. It can be truly said that it is the indispensable servant of all activities of mankind; without it nothing could survive on the present-day basis of civilization. Lastly and conclusively it is the most important single thing on the face of the earth. That's paper!"

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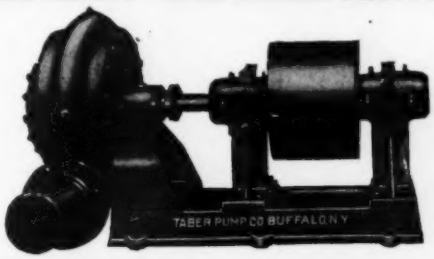

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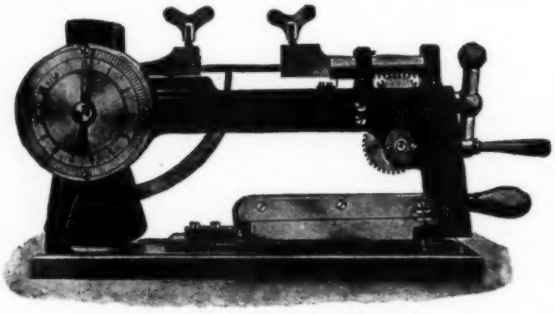
Paper Tester No. 400

Indicates accurately tensile strength in pounds and percentage and stretch in inches and percentage—all in one operation. Temperature makes no difference. It is the "Supreme Court" of all testing machines. No springs to get out of order. No glycerine or rubber discs to replace. All numerals are in English units and not in Continental Metric system.

Automatic Micrometer

Measures thickness of board and paper accurately. Best instrument on the market for this purpose.



Paper Tester No. 399

Indicates breaking or tensile strength of paper. Operated by means of gears and screws. No springs to weaken and influence results. This machine is portable, weighing less than five pounds.

Pocket Micrometer

Handy pocket gauge for paper or board. Very accurate.

Paper Scale

Indicates ream weight 24x36—480 or 500.

These scales are furnished for weighing a full size sheet, 24x36, or a small piece. Both will indicate ream weight by direct reading. No springs.

Pocket Scale

For coarse or fine papers. By weighing a piece 2½x3¾ the standard ream weight is accurately shown. Very accurate and reliable. Weighs less than one pound and can be carried without inconvenience.

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PAPER AND TWINE
210 Walnut Street, Cincinnati, Ohio

Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

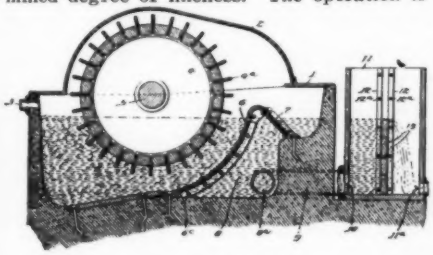
Removing Ink from Paper

PAPER from which printer's ink is to be removed is pulped with twenty percent of its weight of hot water and one to two percent of a mixture containing equal parts of oleic acid or other liquid fatty acid, and an alkali oleate or the sodium salt of a sulpho-acid, such as sulpho-oleic, sulpho ricinoleic or sulpho-resinic acid. This operation, which should continue for the period of approximately one hour, effects the solution of the oily vehicle of the ink and sets free the carbon and other pigments. These are removed by intimately mixing the pulp mass with a quantity—equal to the weight of the paper—of a volatile hydrocarbon, such as toluene or xylene. Tepid water is then added with constant agitation in sufficient quantity to give a two percent aqueous suspension of cellulose, and the whole is passed through a centrifugal filter to separate the cellulose. The volatile hydrocarbon and the pigments it has absorbed are readily recovered by distillation. British Patent No. 198,854.

Beater

UNITED STATES Patent No. 1,503,138 is concerned with an improvement in the construction of a beater and in the process of producing paper pulp with its aid.

In this process the paper stock is reduced to a predetermined degree of fineness. The operation is carried out in a continuous manner, and when the pulp has reached the proper degree of hydration, it is drawn off. The reduction or beating of the stock consists in subjecting it to the action of a breaker. This comprises a screened discharge chamber, which is arranged in such a manner so as to cause a gravity discharge of the reduced stock to and through a receiving vessel, as seen in the accompanying figure. This vessel contains means for automatically maintaining the water and raw stock at a level in the receiver as well as in the beater.



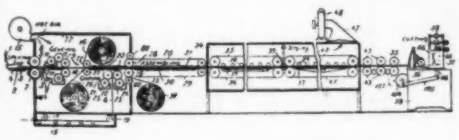
Treatment of Sulphite Liquor

GERMAN Patent No. 392,360 is concerned with a process of treating sulphite-cellulose waste liquors before evaporation. The waste liquors are neutralized under pressure and at a temperature above 100 degrees C. For example, they may be forced by pressure from the boiler into a closed neutralizing vessel that is connected with it. In this way heat is conserved and foaming is avoided.

Cross Corrugated Paper Board

UNITED STATES Patent No. 1,504,218 is concerned with an apparatus and process for the manufacture of cross corrugated paper board.

In this machine that is used for this purpose there are arranged circumferentially corrugated splicing rolls to splice and continuously feed forward strips of longitudinally corrugated paper liner. Gluing rolls are provided to apply adhesive to both sides of the liner.

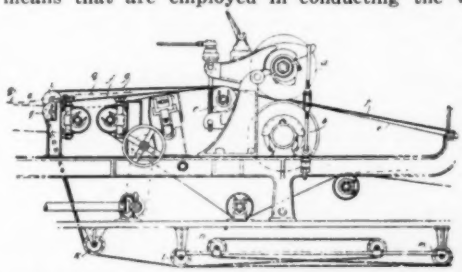


Means are also at hand for continuously feeding and applying the adhesive to a transversely corrugated web of paper liner, and feed roll feed between and on the outside of the liners paper facing webs to form a continuous web of cross corrugated paper-board. The board is then fed along and reaches a drying chamber, which is made air-tight and is provided with air circulating devices around the assembling webs to force blasts of hot air through the transverse and longitudinal channels around the liners, to dry the adhesive in the moving paper board. Means are also provided to cut the assembled and dried paper board into sheets.

Paper Making Machine

THE following illustration shows the paper making machine that is patented in United States Patent No. 1,504,727.

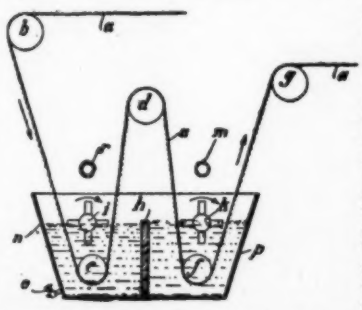
The improvement in the machine is concerned with the means that are employed in conducting the web of paper onto the press rolls. This device comprises a sheave element which is mounted on the periphery of one end of the upper press roll, a pair of endless traveling carriers which bear in this element. The carrying surface of the sheaving element is below the web carrying surface of the press roll by the thickness of the carriers. The result is that the web-carrying surfaces of the latter will travel approximately at the same speed as the drier rolls. The sheaves are also arranged for conducting the carriers to and from the press rolls, the sheaves in front of the latter being adapted to separate the carriers at the web receiving end, so as to permit the lead-end of the web to be placed between them.



Washing Felts

THE accompanying figure illustrates a new way of washing felts, which is patented in German Patent No. 376,701.

The felt (A) is led around the guide rollers (B), (C), (D), (F) through the trough (P) which is filled with the wash liquor. The working side of the felt is on the inside and faces the bottom of the trough, as is indicated by the dotted lines in the figure. The trough (P) is divided into two equal halves by means of the partition (H). Over each of the two guide rollers (C) and (F), there is arranged a paddle roller for agitating purpose. This is seen at (I) and (K). These agitators serve to force the liquor through the felt from the back, so that the force of the water is away from the working side of the felt.



An inlet pipe is arranged over the right half of the washing trough. This inlet pipe is indicated at (M). The flow of the liquor is from right to left, which is in countercurrent with the travel of the felt. Additional liquor is also added through the inlet pipe at the left (R), and the liquor is then forced through the felt by means of the paddle stirrer (I). At the bottom of the trough there is a cock which serves to

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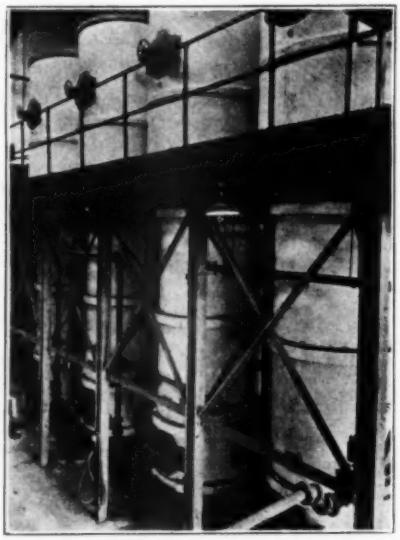

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permit the removal of the dirt which accumulates on the bottom of the trough.

The particular advantage of this washing process consists in the fact that in the passage of the felt through the wash liquor, which is forced against the under side of the felt, the impurities are removed from the reverse side of the felt, forced through its meshes and finally driven away from the working surface of the same. Thorough cleaning of the felt is gained in this manner. Due to the fact that the paddle rollers work against a comparatively large portion of the felt all the time, tearing of the felt is avoided. This is a condition which arises in most washing apparatus. Another advantage is the avoidance of high pressure in the water lines which feed the water to the washer, and furthermore a saving in water is effected. The washer is also very well designed so that it takes only a minimum of space.

Action of Sulphurous Acid on Wood

AN EXHAUSTIVE experimental investigation was made into the question of the action of sulphurous acid on spruce wood with special reference to the lignosulphonic acid that is obtained in this process. The investigation was in connection with a process which has recently been patented in England, British Patent No. 12,943 of 1922, by C. F. Cross and A. Engelstead. In this process spruce wood is heated with a seven percent solution of sulphurous acid which has been previously freed from sulphuric acid. Satisfactory results are obtained by heating the wood to a temperature of 100 to 110 degrees C. The main reaction was found to be a sulphonation of the lignone complex that is present in the wood, which is in direct opposition to the statements of leading authorities.

The results that were obtained in this series of experiments are summarized as follows:

1—Aqueous sulphurous acid is able to resolve the coniferous wood substance giving as the chief non-cellulosic product a lignosulphonic acid, $C_{28}H_{30}O_{12}S$.

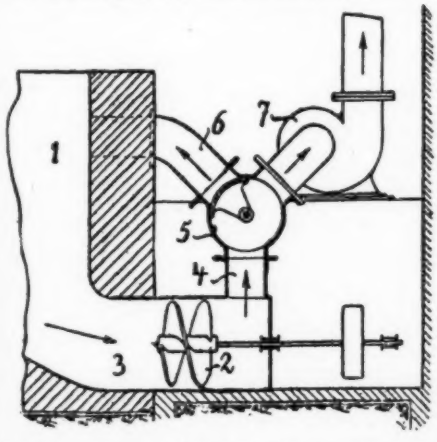
2—This acid differs from those previously obtained from the calcium bisulphite process in containing a lower proportion of sulphur, 5.5 against 7.3 percent. Its properties are similar to those of the other acids but it differs specifically from them.

Detailed investigation of the properties of this acid was made, but this is of scientific interest only. The reader is referred to the original article in the Journal of the Society of Chemical Industry, 1924, page 257T.ff.

Stuff Chest

THE figure shows a section of a stuff chest with certain improvements which have been patented in German Patent No. 395,732.

A screw pump (2) is arranged within the outlet pipe (3) of the stuff chest (1). The purpose of this pump is to keep the contents of the stuff chest in constant circulation. The chamber in which the screw pump work is also connected through the pipe (4) and the three way valve (5) with another pipe (6) which opens out into the stuff chest (1). Another pump (7) (a centrifugal pump), is connected with the three way valve (5). This pump serves to empty the contents of the stuff chest or to feed material into it. The pumps (2) and (7) are arranged with respect to each other in such a manner that when the three way valve is set in the correct position, the pump (2) can be employed to carry the stuff to the pump (7) and in this way the contents of the stuff chest are emptied.



This type of construction possesses the advantage that the pumps (2) and (7) are chosen in such a manner that they work together in the best possible fashion. In other words, pump (2) can be constructed in such a way that the stuff which flows into it, or which it sucks out of the stuff chest, can be pumped in large quantities to a moderate height, while the pump (7) is built in such a fashion that it can raise the stuff to quite a height without any great difficulty.

Manufacture of Paper from Resinous Wood

WOOD that contains much resinous matter has not been used with a great deal of success in the manufacture of paper. The process which is described in French Patent No. 569,454 is concerned with the manufacture of paper from resinous pine wood. The paper that is made from this wood comprises all the grades commonly manufactured, wrapping paper, printing paper, writing paper and the like. The process consists of the following operations.

Fig.1

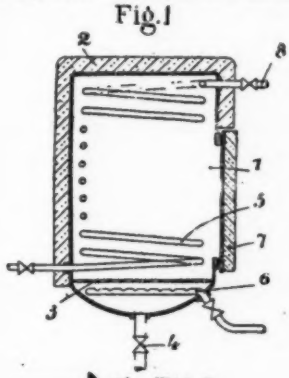


Fig.2

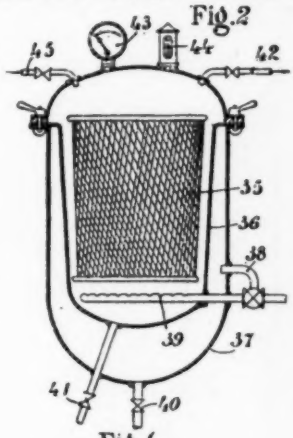


Fig.3

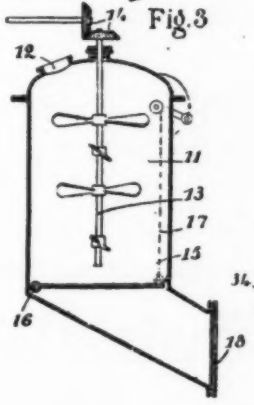


Fig.4

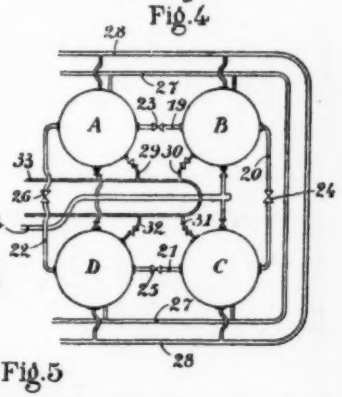
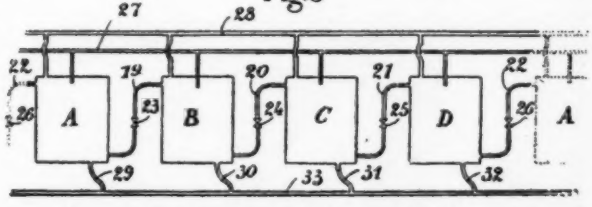


Fig.5



1—The heating and oxidizing action of superheated steam which is used at a temperature which is below or just about at the point of decomposition of cellulose, that is, approximately 250 degrees C. The steam is allowed to act on the wood cut into blocks. One variation in the process consists in eliminating the superheated steam treatment and substituting for it simple treatment of the wood, which has been cut into very small pieces, with a liquor. This applies only to those woods which do not contain much resinous matter.

2—The wood is then barked and comminuted finely and treated in the usual manner with weak alkaline solutions at elevated temperature. This treatment removes the resinous matter. In the case of wood that contains only slight percentages of resinous matter, the comminution of the wood can precede the treatment with steam. This permits carrying out two stages of the process in the one apparatus, namely, the action of superheated steam and of the alkaline reagent.

3—The wood is then ground in the presence of a hot solu-

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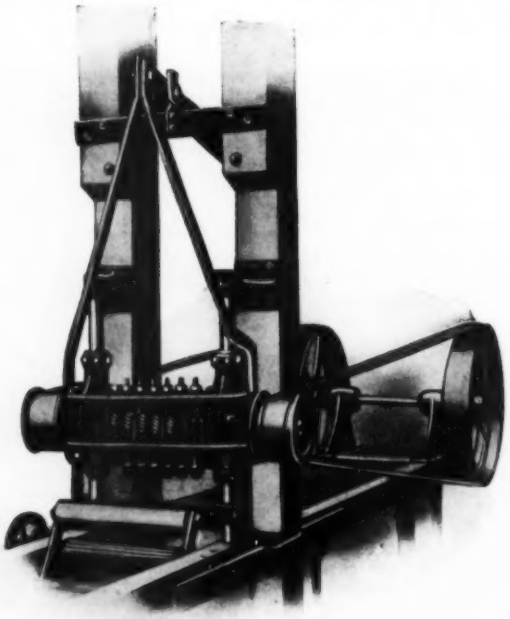

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tion of alkaline salts, which have a solvent and oxidizing action on the lignocellulose.

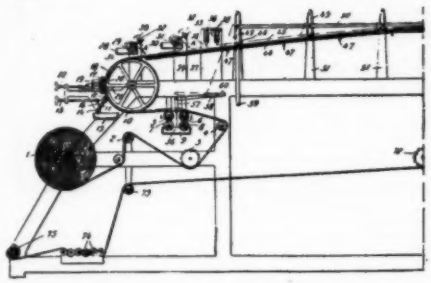
4—The digested material is then refined in the beating engine and the pulp is subsequently bleached and made into paper.

The by-products that are recovered in this process consist of sodium resinate which can be used afterwards in the sizing of the paper. Insoluble resinates are also produced which are employed in the making of varnishes. In this process soda is recovered.

The apparatus that are used in the process are shown in the accompanying figure. In figure (1) is seen the apparatus that is employed in subjecting the wood to the action of superheated steam. Highly resinous wood is treated in this apparatus. Figure (2) shows the apparatus which is employed in the case of wood that contains only small proportions of resinous matter. Two operations, treatment with superheated steam and with alkaline reagents, are carried on in this digester. Figure (3) indicates the apparatus in which the wood, that is first subjected to the action of superheated steam in the apparatus of figure (1), is treated with dilute solutions of alkalies. A stirrer is provided for agitating the wood and liquor during the course of the reaction. The arrangement of these apparatus in a convenient and technically correct manner is seen in figure (4). Figure (5) is the side view of the apparatus shown in plan view in figure (4).

Marbling Paper

UNITED STATES Patent No. 1,498,200 is concerned with an apparatus and method for the marbling of paper. The machine is used for coating paper and consists of a combination of a continuous sheet of paper which is passed through the apparatus, and also of means for spattering the moist sheet with specks of liquid color. There is also a reciprocating device movable across the sheet which spreads the specks over the moistened face of the same. The paper is dried quickly so as to limit the spreading of the specks.



Ozocerite Soap as a Paper Size

GERMAN Patent No. 376,761 is concerned with a process for making and using a size which is manufactured from ozocerite wax in the production of paper.

The soap into which the wax is first converted is made with the aid of a solution of caustic soda. The saponification process is carried out at an elevated temperature. The first step in the process is the purification of the montan or ozocerite wax, which is accomplished by treatment with the aid of a solution of chloride of zinc. The purified wax is then ground up as finely as possible in a ball mill.

In order to secure complete saponification, which is the next step in the process, it is necessary to employ as little water as possible in the process. For this reason the caustic soda is employed in as concentrated a solution as possible. The saponification lasts from three to four hours and is carried on at a temperature of approximately 120 degrees C. The pressure within the autoclave is about six atmospheres.

One particular advantage of this process is that it does not require the use of alcoholic solutions of the alkali but can be carried out with ordinary aqueous solutions of the caustic alkalies. This avoids the necessity of using an emulsifying agent to bring the montan wax soap into solution and of recovering the volatile solvents so that they may be used over again.

Detection of Acids in Paper

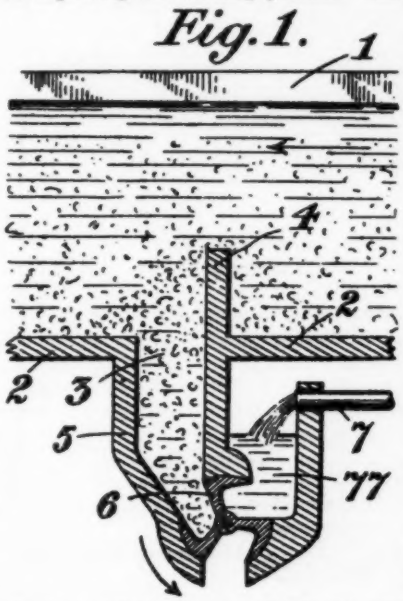
WHEN paper is impregnated with a dilute acid solution, it appears to absorb hydrogen ions, since impregnated paper appears to react more feebly towards indicator test papers than the solutions themselves. For example the limit of sensitiveness of litmus paper towards an acid solution is N/5000, but only N/100 towards paper which is impregnated with an acid. Thus inaccurate results are obtained when titration methods are employed for determining the acidity of the paper. The acidity of the paper is most accurately shown by "spotting" the paper with a solution of an indicator, and this method is preferred to that in which the paper is pressed in contact with a moistened indicator test paper. Paper which has an acidity not greater than p_H is not likely to promote the rusting of iron with which it comes in contact.

For further details see Papierfabrikant, 1924, volume 22, pages 205-208.

Washing Paper Pulp

THE figures show an apparatus which is patented in a British patent and which was designed for the purpose of improving the washing process. The washing apparatus is employed for treating a stream of liquid which contains materials in suspension. It is particularly applicable to rag engines, patchers or breakers for breaking-in, beating, bleaching or otherwise treating the pulp.

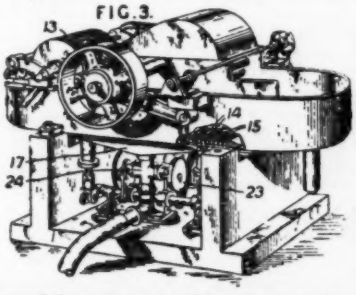
Fig. 1.



In figure (1) are seen at (4) ribs or riffles which are located in a vessel (1). These ribs are for the purpose of separating the parenchyma, pith, and other non-fibrous material together with knots. The extraneous materials collect at (3) and are removed by a continuously rotating pocket wheel or cylinder (6), a conduit (7) supplying liquid to replace the bulk of liquid which is removed by the wheel (6).

When this apparatus is applied to a rag machine, as shown in figure (3), a drain grid is provided. This is seen at (14), in the rear of the drum washer (13). Movable vanes (15) are arranged to project beyond the grid to collect the foreign material, and when withdrawn below the grid, the foreign matter falls through the grid into a sump (17). The cock (24) for the sump is controlled by a cam (23), which operates the vanes, the sump being opened when the vanes are raised and the grid closed. Instead of the flat vanes (15), curved or segmental vanes may be used, and these may be rotated or reciprocated. The vanes and the edges of the grid bars may be sloped upward in the direction of travel of the material past them.

FIG. 3.



Accelerating the Bleaching of Pulp

WHEN the different vegetable fibers, that are employed in the manufacture of paper, are treated with an alkaline reagent for the purpose of dissolving the gummy, resinous and ligneous matters that bind together the different parts of the plant structure, so as to isolate the fibers which can then be used in the manufacture of paper, it is impossible to prevent a part of the cellulose from being converted into hydrocellulose or oxycellulose. This of course means that a certain proportion of valuable fiber is lost.

The invention which is patented in French Patent No. 570,353 is concerned with the use of these two derivatives of cellulose in accelerating the bleaching of the fibers after they have been digested and refined in the heating engine.

It is known that the salts of copper have a certain, peculiar action on cellulose. For example, when cellulose is treated with Schweitzer's reagent, the cellulose is dissolved. How-

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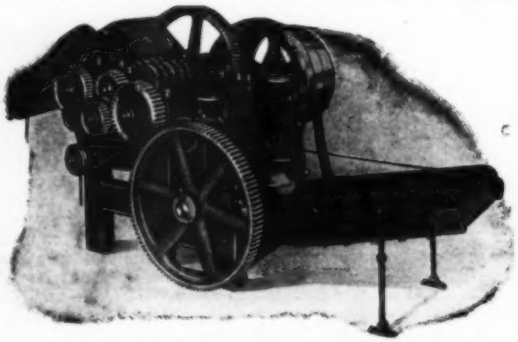

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ever, if hydrocellulose or oxycellulose is brought into contact with copper nitrate, for example, the copper is replaced and the acid is set free. The same thing will happen with copper sulphate, but copper nitrate is selected because of the oxidizing action of the same, which has also the effect of accelerating the bleaching of the fiber.

Copper is dissolved in dilute nitric acid, the excess acid is neutralized with sodium carbonate or bicarbonate, and a pale bluish colored powder is obtained. When brought into contact with hydrocellulose or oxycellulose, this powder will decompose.

The pulp is beaten in the ordinary manner in beaters, but it is not washed too much so as to remove all the oxycellulose or hydrocellulose formed. The pulp is then removed to the bleachers and there it is treated with a solution of the bleaching liquor, to which there has been added the appropriate proportion of copper nitrate. The percentage of the copper salt depends on the speed with which the bleaching is desired to be carried out. From three to ten percent of the weight of the pulp is used.

New Process for Rapid Determination of Degree of Beating

THERE are four principal factors concerned in the beating of pulp. These are as follows:

1—The nature of the stock that is being beaten.

2—The protection of the stock during the process of beating to produce highly hydrated pulp.

3—The beating to produce slow or hydrated stuff.

4—The shortening of the beating process.

Up to very recently there have been just three methods which were used to determine if the stock had been beaten long enough in the beater.

The first of these consisted in holding the hand in the beater

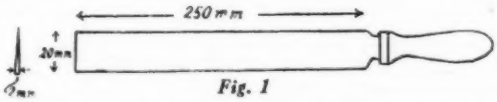


Fig. 1

trough. The length of the fibers were then determined, which remained behind in the hand as it was held in the beater. The hydration of the pulp was established by the friction of the pulp as it flowed past the hand.

The second method consisted in mixing the stuff in much water and observing the length of the fibers and the third method consisted in drawing a knife through the stuff. Then a number of other methods were developed which are listed in the article, from which this abstract is taken and to which the reader is referred for further information. (Papierfabrikant, 1924, pages 265-270.)

One of the most rapid methods was that devised by Hoffmann Jacobsen and is dependent on the grams of the stuff that is caught per meter length of the knife. The test is practically independent of the density of the pulp in the beater and takes but half a minute.

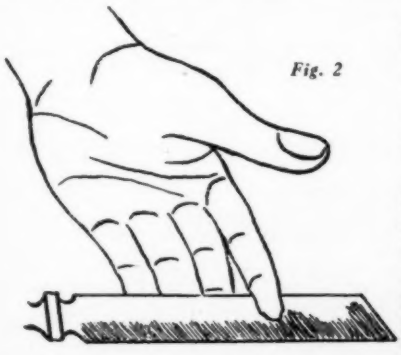


Fig. 2

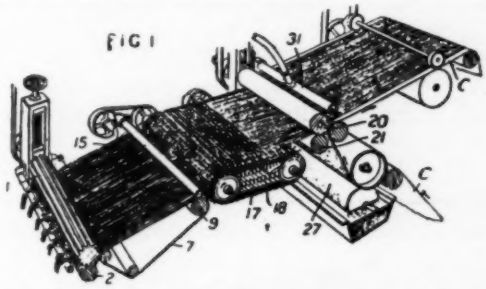
A specially designed knife is used in this method. This knife is shown in figure (1). The knife may be made of brass or bronze and the edge of the knife must not be too sharp. The pulp that is caught by the knife edge is removed and weighed to best advantage on a scale of the kind that is used for weighing letters. This scale is made in a special way for this purpose and has pans which can be removed so as to facilitate the weighing process. The scale must weigh as much as fifty grams and the scale divisions must be made in half gram units.

The knife is drawn through the stock in the beater at an angle, about 45 degrees, and with a speed of about eight to ten meters per second. The hand in which the knife is held must be held stiffly and the knife edge must be in front. The pulp which collects on both sides of the knife is removed as shown in the accompanying figure (figure 2). Four separate tests are made with this instrument and the pulp obtained from the four tests is weighed together and the grams per meter length of knife are determined.

This result is then used to determine the length of the fiber by reference to curves.

Reinforced Paper

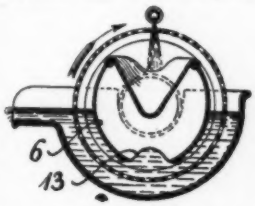
IN THE manufacture of paper which is reinforced with filaments of unspun long fibers such as flax, sisal, ramie and the like, the filaments are secured to the paper by an adhesive while the paper is under lengthwise tension. The machine in which this process is carried out is seen in the accompanying figure. The filaments, which have been previously freed from woody matter, are fed by the rolls (2), either direct or by an apron (7) to gripping rolls (15), (9) and from these to a drawing or hacking apron comprising slats or rods (17) connected at their ends to chains (18). The slats (17) are provided with pins. The chains are driven at a slightly greater speed than that of the filaments, so that the filaments are under tension and drawn into a parallel position.



In this condition they pass between the rollers (20) and (21), which rotate at a slightly greater speed, thus maintaining the tension, and the filaments are delivered to a paper web (C) which is coated at the point (27) with a waterproof adhesive preparation. A cooling blast of air may be projected on the web by means of a pipe (31). A second paper web may be applied, the filaments being thus enclosed between two paper webs.

Process of Screening Paper Pulp

IN GERMAN Patent No. 384,732 there was described an apparatus for the screening of paper pulp and the like, which consists of a cylinder made of wood and open at the bottom and which is partly filled with the paper stock. Accordingly it was not possible to choose a means for varying the pressure which did not come in contact with the stock that was being treated.



The apparatus which is seen in the accompanying figures and which is patented in German Patent No. 388,250 is an improvement which consists in the fact that the wood cylinder is closed at the bottom, and for the distance that it comes in contact with the paper stock or over its entire circumference, it is made in elastic form, so that variations in the pressure are directly transmitted to the paper stock by the movement of the walls of the wooden cylinder.

The container (6), which dips into the mixture of water and paper stock, is not open at the bottom, but is closed by means of a membrane (13). When variations in the pressure within the cylinder take place, then the membrane (13) moves and the stock in the screening cylinder receives the necessary variation in motion.

Rubberized Paper

LOOSE or unwoven fibrous material, such as paper pulp, is incorporated with vulcanized rubber latex. The vulcanized rubber is thus deposited on the fibers by evaporating the liquid or by adding a coagulant such as alum or acetic acid to the mixture. For example, a paper composition comprising pulp containing 2.25 percent of dry fiber and ten percent of its weight of rosin size, is mixed with a quantity of the vulcanized rubber latex containing one percent of rubber calculated on the dry fiber in the pulp. Sufficient alum is then added to precipitate the size and to coagulate the latex, and the pulp is worked up to paper in the usual manner. Higher proportions of the latex may be added if stronger paper is required. British Patent No. 210,526.

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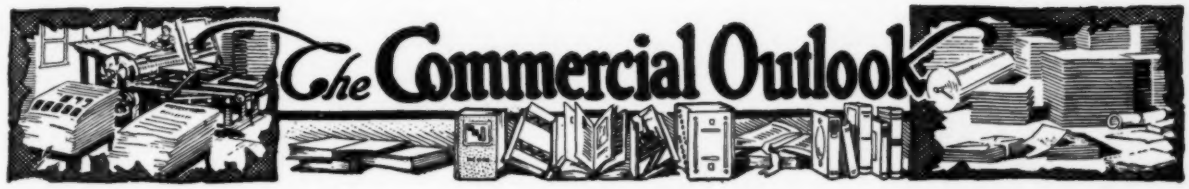

New York, September 2, 1924.

DISTINCT improvement is taking place in the paper market. During the last month demand for most kinds of paper has increased to a very gratifying degree; there is still a good deal of caution practiced by buyers in laying in stocks, but at the same time they are ordering in larger volume, while growth in requirements is compelling many to expand their operations in the market.

Indications are that the industry is well on the way to an active and prosperous fall and early winter during the balance of the year. It is the customary thing for paper demand to broaden in September, but the usual pick-up in buying activity came somewhat earlier than ordinarily this year, and August was marked by a decidedly improved market with prospects of continued increase in business as the summer comes to a close. The improvement in the paper industry thus far has been due to factors both within and without the industry itself. A good part of the demand has come from jobbers all over the country, who, realizing that raw material was on the rise and that everything pointed to higher prices for many kinds of paper, came in to replenish their stocks, to again fill their shelves and storerooms, in part if not entirely, with the obvious result manufacturers experienced a much better call for supplies and in frequent instances found it necessary to speed up production to keep pace with the growing demand.

However, it has been evident that the principal growth in demand has come from consumers. A distinct improvement in business generally occurred in August, nearly all lines of manufacturing and merchandising feeling the increased activity, and, as would be expected, the paper industry shared in this expansion of business activity to its full measure. Consumers, finding their needs increasing, were obliged to buy more paper, and a pronounced broadening of demand from printers, publishers, merchants, converters and other large users of paper was noted. This situation gives every promise of keeping on. There has been a marked change in business sentiment. Nearly everyone is anticipating splendid conditions during the remaining months of the year, business men are radiating optimism, and, after all, this is half of the game, so to speak, because with everyone looking for good business and making plans for it to materialize, there seems every reason to expect that hopes will be realized.

The settlement of the political situation in Europe by the acceptance of the Dawes Plan by Germany is likely to lead to considerable improvement in American business. There seems no doubt, if the reports emanating from the other side of the Atlantic are true, that most of the European peoples are in dire need of various products—raw and manufactured. This has been the case for a long time, or since the war. With the reparations problem taken care of and Germany and the other European nations enabled to negotiate loans, it is quite probable demand for American goods will increase tremendously and that the United States will shortly enter upon a period of export business never before equaled. Obviously, when this business develops, and it should come in the very near future, the paper industry is going to share in it. Not only will there be a direct demand for paper of various kinds from Europe, but there will also be a big demand for paper for the packing of other merchandise to be exported to Europe. Many take the view that a good part of this business with European countries will come before the present year is out, and everyone in the paper industry knows that when the industry is enjoying good export business it prospers because foreign buyers take that surplus of production off the domestic market which in dull times acts as a blanket to depress the market for paper in this country.

The raw material situation has reached a point where it appears almost certain that some sharp advances in paper prices will occur in the near future. Raw material has been advancing at a rapid clip. Rag prices are up in some cases as much as a full 100 per cent from the levels prevailing earlier in the year; waste paper prices have scored a big gain during the last few weeks, some grades being double in price of less than two months ago, and now prices of wood pulp have started to climb, ground wood having risen some $3 to $5 a ton recently, and sulphite and kraft pulp having stiffened in price. During this period of advancing raw material costs very little change has been recorded in paper prices. Manufacturers have been reluctant to raise quotations in the fear of disturbing the equilibrium of the market and of discouraging demand. But it stands to reason that they cannot go on indefinitely producing paper and marketing it at the same prices they did when raw material was so much cheaper. In fact reports say that a good many paper mills are today being operated at little or no profit to their owners, in view of which it is a foregone conclusion that as soon as manufacturers can see their way clear to do so without disturbing the market and allaying the demand, prices will be marked up in closer relationship to prevailing costs of production.

The Department of Commerce on August 13 issued its first statistical report on the paper board industry of the United States, which, it is understood, is to be a regular feature of the Department's program hereafter. The report showed that production of board in the U. S. during May last totaled 166,398 net tons, while mills received orders for 67,199 tons during the month, and had unfilled orders on hand at the end of May amounting to 67,199 tons. Board mills operated 7,718,075 inch hours in May, and consumed 158,399 tons of waste paper during the month.

June production of paper of all kinds showed some decline compared with previous months, according to the monthly summary compiled and issued by the American Paper and Pulp Association. Total production for the month was 414,472 net tons, contrasted with 455,708 tons in May, and 452,211 tons in April. Shipments in June amounted to 406,153 tons, while mill stocks at the end of June were 252,758 tons, against 243,068 tons at the end of May.

Some reports have been received of the offering of foreign news print in the market here at price concessions, it being stated that some supply has been available at 3.40 to 3.50 cents per pound on the dock at New York, and even at slightly cheaper figures. However, domestic and Canadian quotations on news print are firm on a basis of 3.65 cents f.o.b. mills for standard news in rolls. Demand has increased from transient buyers, and also from contract purchasers, some publishers having found it necessary to augment their contract supplies. The outlook for print paper is bright since consumption promises to be heavy in the closing months of the year with a national election on tap and with good retail business in various lines forecast.

A marked expansion of demand for box boards was noted during August and prices of most boards strengthened. Plain chip rose in the East to $45 a ton f.o.b. New York, and news board to $47.50 to $50 for the filled quality of such board.

Coarse papers are in better call and firmer in price, although no important changes have as yet developed. Fine papers are moving along in a steady way, showing gradual improvement and a firming price trend. Building papers continue to enjoy a fairly active demand, while book paper is wanted in larger volume than in some time, with mills operating at much better capacity and with prices tending upward.

Fall Meeting of Tappi

The fall meeting of the Technical Association of the Pulp and Paper Industry will be held in Buffalo at the Hotel Statler, October 14 and 15.

Following the business session the subsequent ones will be devoted to the discussion of such problems as vocational education and training, paper drying operation tests, paper testing and relative humidity conditions, revision of the standard method of testing pulp for strength, prevention of waste in the mill, effluent and stream pollution.

The fall meeting, according to established custom, will be given to consideration of practical manufacturing problems.

The Dyestuffs Department of E. I. du Pont de Nemours & Company has just placed on the market a new acid color, known as Pontacyl Light Red BL. It is a bright bluish red shade, possessing exceptional fastness to light, and is said to be one of the best fast to light acid reds for calender coloring or coating of paper.

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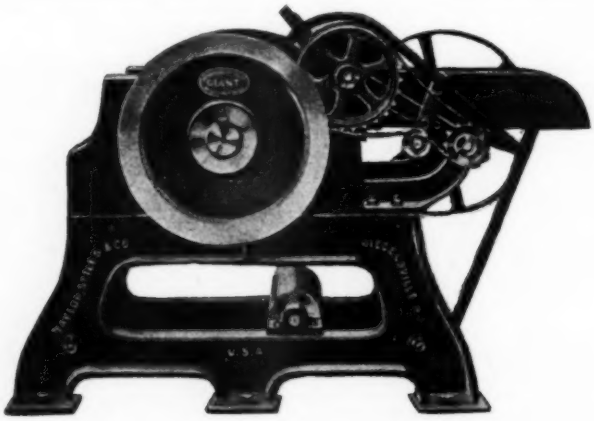

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Papermaking Rags

While prices of papermaking rags continue on a high level and, as regards most grades, firm, there has been some slowing down of demand in the closing days of August and certain classes of stock have developed a little easier undertone. The reaction—as narrow in scope as it is thus far—seems to be nothing more than a natural decrease in demand following a period of active buying by consumers and the sharp advance in market values, and present prospects are that the softer condition which has developed in some parts of the market is not likely to carry prices much below prevailing levels. Fundamentally the situation in papermaking rags is strong, and there are quite a few factors which are of sufficient importance as to probably hold up values at around current rates, or very close to them, for the remainder of the year.

From all indications, paper mills in a fair number of cases have covered their requirements for a time through recent purchases, and therefore have been enabled to curtail buying. Ordinarily a slump in demand such as occurred in the latter part of August would have occasioned a sharp drop in prices, but in spite of the fact that some consumers, particularly roofing paper manufacturers, noticeably reduced their buying, prices underwent but slight change in a downward direction, and since then it appears ample demand has arisen to again steady quotations though on a little lower basis than previously prevailed.

Dealers in many cases assert that they would like to see prices come down a little from the high levels recently reached. They state that the sharp rise in the mill value of rags has so advanced prices at the collection source that it is a difficult matter for them to purchase mixed rags, sort them out and prepare them for mill customers, and realize a profit in their undertakings. This, it is said, is especially true as concerns low grades such as are used by roofing paper manufacturers. At the same time, it is contended that it is necessary for consumers to continue granting high prices for the choice grades of rags because labor is so costly and the finer qualities of rags are so scarce that conditions fully warrant the market levels obtaining, and if paper mills are to get the supplies desired they must pay attractive prices.

The conditions in the rag industry in Europe tend to keep prices high in the United States. It is a fact, according to prominent importers in New York, that the prices of rags on the other side of the Atlantic are above those ruling in the market here at present. Importers say that nearly all of the offers received from abroad are at rates beyond a parity with our market, and that dealers in Europe do not seem the least anxious about effecting sales to this country because they have very small accumulations on hand and therefore are not pressed to sell. Moreover, collection circumstances in Europe are much the same as in the United States; labor is high, fewer gatherers of rags are combing the cities and country districts than ordinarily, and the production of rags is lower owing to people wearing their clothing longer. Imports of papermaking rags from Europe, it is declared, will likely show a substantial decline during the next several months, partly because mills in the U. S. have curtailed buying and partly because fewer rags have been available in the various European countries recently.

Roofing rags are now selling at about a price basis of 2.40 to 2.50 cents per pound f.o.b. New York for No. 1 grade, and 2.20 to 2.30 cents New York for No. 2 packing. The market for this class of material reached a point early in August where mills paid several dollars per ton in excess of these figures, and some heavy buying was indulged in at the top prices. Foreign roofing stock is quoted at 2.40 to 2.50 cents ex-dock New York for linsey garments, and 2.30 to 2.40 cents for dark colored cottons, and importers declare it is rather difficult to secure such rags in Europe to offer mills at these prices.

New cuttings of all kinds are firm to strong. Production has increased but slightly as clothing manufacturers have not yet got into their fall swing, and dealers are holding stocks of cuttings with pronounced firmness, frequently turning down mill orders because of being dissatisfied with the prices stipulated. However, improvement in the output of cuttings should soon be recorded, and there seems little doubt that when more cotton goods are cut up and more cuttings produced, prices will react somewhat unless, of course, demand from paper mills should increase in like proportion.

No. 1 white shirt cuttings are firmly quoted at 14.50 and 15 cents per pound f.o.b. dealers' shipping points, and it is assorted these rags are held in light supply. Blue overall cuttings are scarce and firm at 10.25 cents a pound at shipping points, while washables are reported bringing 6.50 cents in sales to paper mills, light silesias 10 cents, fancy shirt cuttings 8 cents, unbleached muslins 12.50 cents, and O. D. khaki cuttings 6.25 cents.

Old whites are firm and are moving freely. Extra No. 1 repacked white rags are fetching as high as 8.50 cents at dealers' shipping points, with other packings of No. 1 whites quoted down to 7.75 cents. No. 2 whites are selling at 5.25 to 5.75 cents per pounds. Repacked thirds and blues are quoted 4 to 4.50 cents a pound at shipping points, and rough packing of blues at 3.50 to 3.75 cents.

Average quotations f.o.b. shipping points and ex-dock New York follow:

New stock—	New York and Chicago
White shirt cuttings, No. 1	14.50-15.00
White shirt cuttings, No. 2	8.50- 9.00
Fancy shirt cuttings	8.00- 8.25
Washables, No. 1	6.50- 6.75
Unbleached muslins	12.50-12.75
White lawns	12.25-12.50
Overall cuttings, blue	10.25-10.50
Black silesias	6.00- 6.25
Light flannelettes	10.00-10.25
Canton flannels, bleached	12.50-13.00
Canton flannels, unbleached	11.75-12.00
Shoe cuttings, bleached	10.25-10.50
Shoe cuttings, unbleached	9.50- 9.75
Light silesias	10.00-10.25
O. D. khaki cuttings	6.25- 6.50
Mixed khaki cuttings	5.75- 6.00
Corduroy cuttings	5.25- 5.50
Cottonade cuttings	5.00- 5.25
Linens, No. 1 white, foreign	16.00-17.00
Light prints, foreign	6.50- 7.00
Old stock—	
Whites, No. 1, repacked	8.00- 8.50
Whites, No. 2, repacked	5.50- 6.00
Whites, house soiled	3.75- 4.00
Whites, street soiled	3.50- 3.75
Lace curtains	5.25- 5.50
Thirds and blues, rough	3.40- 3.60
Thirds and blues, repacked	4.00- 4.25
Black stockings	4.25- 4.50
Cotton canvas, No. 1	5.00- 5.50
White cotton batting	4.50- 4.75
Roofing, No. 1	2.40- 2.50
Roofing, No. 2	2.20- 2.30
Dark colored cottons, foreign	2.30- 2.40
Blue linens, foreign	5.50- 6.00
Gray linens, foreign	6.50- 7.00
White linens, foreign	11.00-12.00
Light prints, extra, foreign	4.50- 4.75

Rope and Bagging

Following a period of easiness during which prices moved off to lower levels, the market for old rope displays a firmer tone and values have regained a part of the ground lost during the recent decline. Demand from paper mills has increased. It is noted that the leading paper mill buying agency has purchased old rope rather sparsely; that is, this central purchasing organization has seemed to be more interested in foreign old rope than domestic rope, but independent mills have absorbed supplies in larger volume and demand from such sources has carried prices a little higher. Domestic old No. 1 manila rope is selling at around 6 cents a pound f.o.b. dealers' shipping points. Some sales at 6.25 cents have been reported, and it would seem as if the market is gradually drift-

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ing to that price level, while foreign rope is commanding practically the same figures as the domestic article so long as the quality of the rope is No. 1 grade. Strings are steady in price and are meeting a fair demand, mixed strings bringing 1.20 to 1.40 cents a pound at shipping points, depending on the packing, and sisal strings 2.25 to 2.50 cents.

A little decline in prices of roofing bagging has occurred, most mills offering no higher than 1.15 cents a pound at shipping points for this grade of scrap burlap. On the other hand, No. 1 scrap bagging continues to fetch 1.75 cents a pound at dealers' points for extra good packing for paper mill purposes. Gunny bagging is firm at 1.80 to 2 cents a pound.

F.o.b. shipping point and ex-dock New York quotations are as follows:

	New York and Chicago
Gunny, No. 1 domestic	1.90-2.00
Gunny, No. 1 foreign	1.80-1.90
Scrap bagging, No. 1	1.60-1.75
Roofing bagging	1.15-1.25
Wool tares, heavy	1.80-1.90
Wool tares, light	1.65-1.75
Manila rope, No. 1, foreign	6.00-6.25
Manila rope, No. 1, domestic	6.00-6.25
Sisal strings	2.25-2.50
Mixed strings	1.20-1.40

Old Paper

What really constituted a wild advance in prices developed in the old paper market during August. Values of this commodity jumped at a rapid pace, so rapid in fact that some grades now rest on levels representing a rise of close to a hundred per cent within the month. The reason for the advance was nothing more than that consumers came into the market for larger supplies, and dealers failed to have the stock wanted and were unable to whip their collection machinery into shape to gather the necessary supply to fill all of the orders placed by board and paper mills.

The advance, however, seems to have been checked. At any rate, prices display a steadier tone and not a great deal of change has developed in the last few days. Low grades led the upward rush of prices. Folded newspapers advanced by leaps and bounds until sales at 95 cents a hundred pounds f.o.b. New York and Chicago were recorded, and it was reported this price was exceeded in some cases. No. 1 mixed paper rose to 85 and 90 cents at dealers' shipping points, No. 1 over-issue newspapers to 1.10 and 1.15 cents, and common mixed paper to 60 and 65 cents.

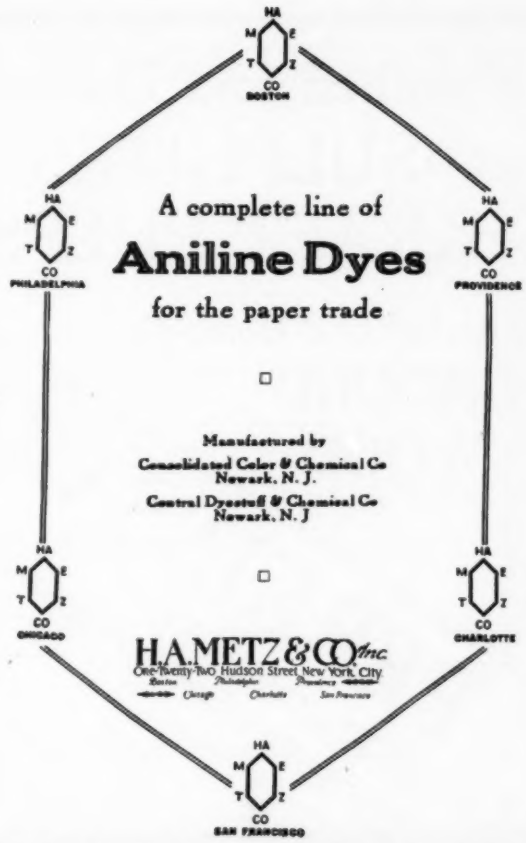
Soft white shavings have been in brisk demand and dealers in common are asking 3.25 cents a pound for No. 1 packing of such shavings, while No. 1 hard white shavings are quoted at 3.75 to 4 cents at shipping points. No. 1 heavy book stock is selling at 1.60 to 1.75 cents per pound, ledger stock at 1.65 to 1.80 cents, and old No. 1 kraft paper at 2.10 to 2.20 cents.

F.o.b. shipping point quotations are as follows:

	New York and Chicago
Hard white shavings, No. 1	3.75-4.00
Hard white shavings, No. 2	3.25-3.50
Soft white shavings	3.25-3.50
Colored shavings	1.50-1.75
Heavy book, No. 1	1.60-1.75
Crumpled book, No. 1	1.25-1.35
Ledger stock	1.65-1.80
Kraft, No. 1	2.10-2.20
Manilas, No. 1	1.20-1.35
White blank news	1.90-2.00
Over-issue news, No. 1	1.05-1.15
Folded news	.90- .95
Mill wrappings	.85- .95
Mixed paper, No. 1	.85- .90
Common paper	.60- .65

Chemical Pulp

Developments seem to be more favorable for the domestic pulp industry. Prices of wood pulps abroad are stiffening, supplies in Scandinavia are not as plentiful as they have been for some months past and consumption of Swedish pulp is increasing not alone in the United States but in the various European countries, and with prices rising to higher levels papermakers are beginning to give greater attention to domestic pulps. Indications are that the domestic industry is due to experience a period of broader market activity during the remainder of this year, and it is not at all improbable that demand for domestic pulps may expand to a point where a good many of the mills in this country which have been closed down will start up anew.

Not much change has occurred in domestic pulp quotations. Manufacturers quote bleached sulphite at 3.75 to 4.25 cents

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The Mitts & Merrill Gravity Feed Shredder performs on magazines, books, old paper and boxboard, frozen or dried pulp laps in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

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per pound at pulp mills, while easy bleaching sulphite is quoted at 2.75 cents and higher and No. 1 unbleached sulphite from 2.50 to 2.75 cents, depending on the grade. News sulphite is bringing around 2.60 cents at pulp plants. No. 1 kraft pulp is selling at 2.75 to 3 cents a pound.

F.o.b. pulp mill quotations are as follows:

Bleached sulphite	3.75-4.25
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1	2.50-2.75
News grade sulphite	2.40-2.65
Soda pulp, bleached	3.50-3.75
Mitscherlich, unbleached	3.25-3.75
Kraft, No. 1	2.75-3.00
Screenings, refined	1.50-1.75

Mechanical Pulp

Prices of mechanical pulp have stiffened to a pronounced degree, and sales have been recorded placing values on a new high level. Spot lots of ground wood have fetched $34 a ton f.o.b. grinding mills, and it is quite probable this figure has been exceeded in some transactions, while pulp for shipment over the balance of the year has been sold at $32 a ton at pulp plants for delivery in stipulated amounts each month.

Offers by producers are far below normal; that is to say, most grinders are seriously handicapped in their operations by low water, and, being compelled to curtail production, are disposing of such stocks as they have on hand very carefully, in frequent instances refusing to sell any pulp at all except to regular customers and even limiting the amounts they dole out to these buyers. Domestic ground wood particularly is scarce, and reports say that a majority of Canadian producers are sold up for some time. With the busy period for the newsprint manufacturing industry on the way, it would not be surprising to witness some sharp advances in ground wood values. Scandinavian ground wood is available in some tonnage, with importers generally quoting $35 a short ton ex-dock New York.

Chemicals

Papermaking chemicals are in slow demand. Consumers as a general thing are managing to make their contract supplies cover their wants and are not engaging in much additional buying, so that market activity is spotty. Prices have undergone no broad changes although the tone is rather easy. Bleaching powder is quoted at 1.90 to 2 cents a pound in domestic drums, caustic soda at 3.10 to 3.15 cents per pound on a flat basis f. o. b. works, and soda ash at 1.38 cents a pound at works. Casein prices continue to range between 10 and 11 cents a pound.

Average quotations are as follows:

Alum, lump ammonia	3.25- 3.50
Alum, lump starch	3.75- 4.00
Blanc, fixe, powdered	3.75- 4.00
Bleaching powder	1.90- 2.00
Brimstone (long ton, at mine)	18.00-20.00
Casein (duty paid)	10.00-11.00
Caustic soda, spot delivery	3.10- 3.15
China clay, domestic washed	12.00-15.00
China clay, foreign	15.00-20.00
Rosin, grade E	5.75
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38
Starch, papermakers', in bags	3.40- 3.70
Talc (ton)	16.00-17.00

New Pneumatic Drill

A new size lightweight non-reversible pneumatic drill has been brought out by the Ingersoll-Rand Co., 11 Broadway, New York. This new drill is known as Size D and is suitable for light drilling up to $\frac{5}{8}$" diameter holes, and reaming up to $\frac{7}{8}$" diameter.

This is a lightweight drill which may be fitted with either breast plate, feed screw or grip handle, and so made adaptable for a wide variety of work. The construction of this machine is very similar to that of the No. 6 and 600 drills which this company brought out some two years ago and which were powered for drilling up to $\frac{3}{8}$" diameter. These drills proved so successful that this new size D drill of larger bore and stroke was developed.

The features of this type of machine are briefly—lightweight aluminum case, with steel bushings cast in all the bearing holes and the throttle hole; castiron cylinders, which are renewable and interchangeable, and special three-cylinder motor. The renewable cylinders are a valuable feature, as any cylinder after long service may easily be replaced and the motor made as good as new at slight cost.

INVESTIGATE
the Qualities of
Natsu China 103
a washed Pennsylvania clay of exceptional purity, uniformity and whiteness. Attractive as to price also!
Samples and analysis cheerfully furnished.
The Natural Products Co.
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SULPHATE OF ALUMINA
MANUFACTURED BY
THE JARECKI CHEMICAL CO.

SODA ASH 58%
MANUFACTURED BY
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COLUMBIA CHEMICAL DIVISION

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Sole Selling Agents
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Quality and Service Guaranteed by the Largest Source of Supply
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Caustic Soda
Over 75 stock distributing points assure prompt shipment with minimum transportation charges.
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Sales Division
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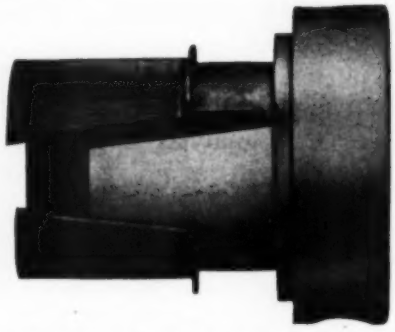
Chicago Syracuse Indianapolis

THE ONEIDA CHUCK for use with Paper or Strawboard Cores



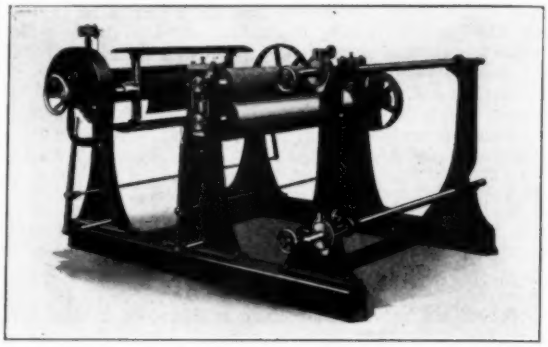
This chuck is so designed that it cannot split or damage the paper core on which the paper is wound and allows the roll to be run down to the last thickness of paper.

The conical or wedge-shaped chucks now commonly used with paper cores invariably split the paper cores so that from ½" to 1" of paper next to the core is damaged. The elimination of this waste will soon pay for the equipment on each machine.

Our Chuck allows the use of a cheap non-returnable paper core that once used can be thrown with the waste and sold.

Let us make up a trial set for you

ONEIDA CHUCK COMPANY
RHINELANDER, WISCONSIN
Eastern Agent, E. W. Myler, 366 Madison Ave., New York City
Telephone: Vanderbilt 6239



IMPROVED TYPE "D" CONVERTING REEL

IN ORDER to get the most satisfactory results from any collapsing reel it is necessary that the reel runs at the same speed as the pull or delivery rolls. To accomplish this we equip reels with Independent Variable Speed Transmission, which enables the operator to quickly adjust the speed of the Reel to speed of paper coming from pull or delivery rolls, regardless of whether Reel is entirely or partially collapsed.

Hudson-Sharp Machine Co.
Green Bay, Wis.

Selling Agents:
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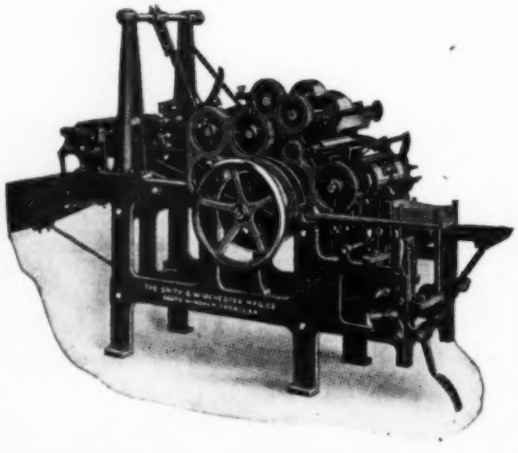
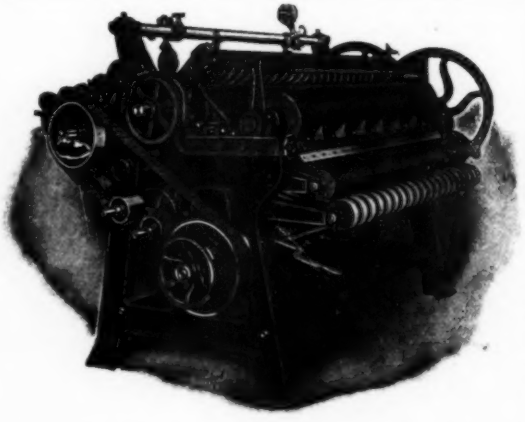
Established 1828
The
Smith & Winchester Mfg. Co.
SOUTH WINDHAM, CONN.

Manufacturers of
Paper Making Machinery



Paper Bag Making Machinery



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Single, Duplex, and Diagonal

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PATENT TOP SLITTERS

Hamblet Machine Co.
LAWRENCE, MASS.

New Papers

Writing—	
White rag	20-45
White sulphite	11-30
Colored rag	16-40
Ledger—	
White rag	20-50
White sulphite	13-30
Colored sulphite	40-30
Colored rag	16-50
Bonds—	
White rag	19-45
White sulphite	9-30
Colored sulphite	10-30
Colored rag	18-45
Book—	
No. 1 S. & S. C.	6.75- 7.50
Machine finished	6.50- 7.25
English finished	6.75- 7.50
Coated and enameled	8.50-14.00
Lithographed, M. F.	9.00-15.00
Newsprint—	
Rolls, contract	3.65 .....
Rolls, transient	3.85- 4.25
Sheets	4.25- 4.50
Side runs	3.25- 3.75
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24-36	.70- .75
No. 1 manila 24-36	.70- .75
Kraft	1.00- 1.25
Wrapping—	
No. 1 Kraft	5.75- 6.50
No. 2 Kraft	5.25- 5.75
Boards—	New York and Chicago
Solid news	52.50-55.00
Straw	55.00-60.00
Plain chip	45.00-47.50
White coated chip	60.00-65.00
Manila coated chip	57.50-60.00
Binder's board	70.00-75.00

Chemical Exposition Date Announced

Owing to some confusion which is believed to exist in a few quarters regarding the holding of the next chemical exposition, an announcement has been sent out by the International Exposition Company, under whose management the Exposition of Chemical Industries has been held since 1915. Numerous inquiries have been received by the management, which lead it to believe that many interested parties are of the opinion that there will be a chemical exposition this year. This is not the case. There will be no chemical exposition in 1924. The next Exposition of Chemical Industries will be held September 28 to October 3, 1925, at the Grand Central Palace, New York.

"This exposition will not be held in the United States prior to September, 1925," states the announcement of the management. "Numerous inquiries which we have received lead us to believe that there is some uncertainty regarding the date of the next Exposition of Chemical Industries. As a result of a vote of exhibitors, taken last year, the decision was definitely reached at that time not to hold the exposition in 1924, but to skip a year and hold the next one in 1925. Owing to the fact that the Chemical Exposition has been held without interruption since 1915, the many inquiries regarding the omission of the exposition this year are only natural.

"At the same meeting in 1923, where time and place for the next Chemical Exposition were discussed and decided upon, the exhibitors decided by a large majority to hold all future expositions in New York, and selected the Grand Central Palace for 1925. New York was decided upon as the logical place to hold the expositions in the future, because it was believed to offer the best location and conditions to attract the greatest number of people interested in the chemical industries from all parts of the world. So that the matter may be definitely understood, the next Exposition of Chemical Industries will be held at the Grand Central Palace one year from this September, during the week of September 28 to October 3, 1925."

New Appointments in Forest Service

Announcement has just been made by the United States Department of Agriculture of several new appointments to field positions in the research branch of the forest service. These are R. E. McArdle, Norfolk, Va., to the new Pacific Northwest Forest Experiment Station; George B. Shivery, of Pennsylvania, to the Southern Forest Experiment Station, at New Orleans, La.; E. E. Probstfield, of Minnesota, to the Cloquet (Minn.) Forest Experiment Station, and Lester H. Reineke, of New York, at the Appalachian Forest Experiment Station, Asheville, N. C.

Mr. McArdle, who goes to the northwest, was formerly employed by the J. L. Roper Lumber Company, of Norfolk, Va. Mr. Shivery, a graduate of Pennsylvania State University and of the Yale Forestry School, comes to the Forest Service from the Bureau of Soils of the Department of Agriculture and will contribute his knowledge of soil problems to the research work of the Southern Station. Mr. Probstfield is also a graduate of the Yale Forestry School, which he attended after receiving a degree from the University of Minnesota. He will act as assistant to Prof. T. S. Hansen of the Cloquet Station, which is working in close co-operation with the Lake States Forest Experiment Station at St. Paul. Mr. Reineke is well known in the Appalachian region, where he came for field experience following his graduation from Cornell University. Mr. Reineke's special field is forest mensuration.

To Specify Paper Sizes

The following memorandum was recently received from the secretary of the Committee on Paper Specifications of the Joint Committee on Printing, Congress of the U. S., Washington, D. C.:

"The committee preparing, by direction of the Joint Committee on Printing, specifications for the purchase of paper for public printing and binding, has under consideration the question of specifying the sizes in which that paper will be ordered.

"The work of the Government Printing Office is of such a character that an unusual size or a different size from that regularly stocked by the office may be needed in large quantity to meet the needs of the Government service, and many advantages would therefore accrue to the Government Printing Office if under each lot number of any particular kind of flat paper, the printing office might order any size paper desired within a minimum and maximum width.

"The committee would be glad to have the views of individual paper makers and dealers on this subject. Any statement should be addressed to Mr. Ansel Wold, clerk, Joint Committee on Printing, Capitol Building, Washington, D. C.

"Should the committee receive no comments or suggestions on this subject, it will be assumed that it makes no difference to the trade whether specific sizes are called for, or the item reads, 'cut any size' minimum width so much, maximum width so much."

Donald J. Macmillan, for a number of years associated with Morey & Co. as manager of its import and china clay departments, has joined Mr. Walter G. Morey in the Morey Paper Mill Supply Company. The company deals in paper mill supplies and is sales representative for the Fitchburg Duck Mill and Brandon Duck Mill, the Joseph O'Neill Wire Works and the Stork Company. The increased business done by the Morey Paper Mill Supply Company necessitated a corresponding increase in personnel, and Mr. Macmillan will assist them in rendering the service for which they already have an enviable reputation and further increasing their business in the lines they carry.

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Canadian Kraft Limited, Three Rivers, Canada
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Howard Smith Paper Mills, Montreal, Quebec
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Standard Quality
Lowest Prices
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Substantial warehouse stocks always maintained at strategically located seaboard stations insure

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EXPORTS

Meeting the keenest competition ever experienced in the world's paper market with European manufacturers quoting bottom prices in an effort to hold on to their share of the business offering in the consuming markets, the United States sold paper valued at $24,903,953 to the countries of the world during the Government's fiscal year ended June 30 last, according to an analysis of paper exports compiled by the Department of Commerce.

Exports of paper board and straw boards lead the classification, being valued at $2,861,319, an increase of 13 percent in value and 30 percent in quantity over 1922-23. Exports of boxes and cartons, valued at $1,100,204, registered an appreciable increase over the preceding year. Wall paper, valued at $619,357, increased nearly 25 percent. Photographic paper maintained its position with exports valued at $1,498,878. Exports of newsprint paper were valued at $1,694,321.

Other classes of paper in which the United States extended its export trade during the year included greaseproof paper, kraft wrapping paper, towels, napkins, cigarette paper, envelopes and specialty lines. The 2½ percent decline in the total paper export trade for the year was, for the most part, scattered over the cheaper classes.

IMPORTS

Wood Pulp

The tone of the imported wood pulp market has firmed to a pronounced degree. Offers of pulp of nearly all kinds from Scandinavian sources have decreased, both in number and volume, and manufacturers on the other side of the Atlantic are quoting higher prices, the advance being due to two principal causes, one of which is that Swedish producers are so well sold up for the year that they are less desirous of effecting further sales in the United States, and the other the improved demand for pulp in the various European consuming countries which has created a bigger market for the Scandinavians nearer home and thereby reduced the supply available for export to America. Illustrative of the strong statistical position of the Scandinavian pulp industry, latest figures through Government channels show that orders received by Swedish mills thus far this year up to August 15 were for a total of 675,000 metric tons of sulphite and 250,000 tons of kraft pulp. These quantities, it is said, constitute the great bulk of supply Sweden has to export for the year; in fact, reports state that it is becoming a difficult matter to buy kraft pulp in Sweden owing to mills being so well sold up, while most Scandinavian manufacturers have but limited amounts of sulphite to dispose of for the remainder of the year.

Advices also tell of the likelihood of a strike in the Swedish pulp industry at the end of this year. The agreement between manufacturers and their employes which has been in effect for several years expires at the close of the current year, and the operatives have announced they intend to demand an increase in wages while the mill owners have retaliated by stating conditions do not warrant an advance and that they will shut down their plants rather than accede to the demands of their employes. Prospects at present are a strike will be declared, it is said, and if such should be the case the result would be to tighten up the pulp markets all over the world but especially in America since consumers here have been securing such a large part of their pulp requirements from Sweden since the war.

Pulp imports into the United States were slightly larger in June than in the preceding month, according to Government statistics. A total of 78,416 tons of chemical pulp was imported in June, contrasted with 73,969 tons in May, and making a total for the first six months of the year of 476,072 tons, or an average per month of 79,345 tons, against a monthly average of 87,058 tons in the corresponding period a year ago. June imports of ground wood amounted to 11,768 tons, against 11,867 tons in May, and making a total for the first half of the year of 91,742 tons, giving a monthly average of 15,290 tons, compared with 22,524 tons average in the same time last year.

Importers as a general thing quote around 2.75 cents a pound ex dock New York for standard Swedish kraft pulp, and this kind of pulp is offered in a rather sparse way. Some sales of extra quality kraft have been recorded at 2.80 and 2.85 cents on the dock. Bleached sulphite of prime quality is quoted 3.75 to 4.25 cents ex dock New York, while strong unbleached sulphite of prime grade is quoted around 2.65 cents on the dock. Quotations on easy bleaching sulphite have advanced to where in excess of 3 cents ex dock is commonly asked, while Mitscherlich sulphite is quoted at a minimum of 2.65 cents for the lower grades and up to 3.25 cents for genuine Mitscherlich. Imported ground wood is quoted at $35 a ton, or a trifle less, ex dock at Atlantic seaports.

Receipts at the port of New York in August and current market quotations ex dock New York follow:

Bleached sulphite, No. 1	$ 3.75- 4.25
Unbleached sulphite, No. 1	2.50- 3.00
Easy bleaching	3.00- 3.25
Mitscherlich unbleached	2.65- 3.25
Kraft	2.70- 2.85
Ground wood, per ton	33.00-35.00

Parsons & Whittemore, 800 bls. from Gothenburg; E. M. Sergeant Co., 2,512 bls. from Gothenburg and 150 from Copenhagen; Hartig Pulp Co., 683 bls. from Gavel, 450 from Rotterdam, 1,500 from Bremen and 125 from Hamburg; Bulkley, Dunton & Co., 1,720 bls. from Bremen and 1,250 from Iggesund; E. J. Keller Co., 6,000 bls. from Sikea; Bankers Trust Co., 164 bls. from Leghorn; Pagel, Horton & Co., 6,900 bls. from Swedish ports; Guaranty Trust Co., 2,400 bls. from Swedish ports, 600 from Bremen and 669 from Hamburg; E. Naumberg & Co., 3,000 bls. from Swedish ports and 800 from Hamburg; Scandinavian Pulp Agency, 2,275 bls. from Swedish ports and 254 from Gothenburg; Castle & Overton, 127 bls. from Rotterdam and 3,430 from Hamburg; Johaneson, Wales & Sparre, 1,466 bls. from Gothenburg and 5,175 from Sundsvall; Lagerloef Trading Co., 45 bls. from Bremen; Ira L. Beebe & Co., 3,000 bls. from Bremen; H. Hollesen, 1,050 bls. from Bremen; Tidewater Paper Mills Co., 6,255 bls. ground wood from Murray Bay; J. Andersen & Co., 250 bls. from Christiania; Atterbury & McKelvey, 150 bls. from Christiania; Mechanics & Metals National Bank, 1,000 bls. from Christiania; New York Trust Co., 332 bls. from Hamburg; Order, 250 bls. from Hamburg, 2,081 from Kotka, 135 from Helsingfors, 150 from Bremen and 200 from Christiania.

Paper Stock

Importations of papermaking rags held up to a fairly high mark during August, judging from the arrivals at the port of New York. The total doubtless compared favorably with recent months at any rate, while receipts of old rope showed a falling off, and of bagging and miscellaneous paper stock were nothing more than of usual volume. Imports of papermaking stock of all kinds through the port of New York in August, with names of consignees, were as follows:

Old Rope

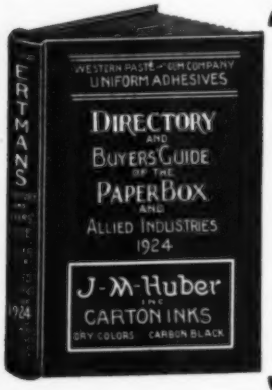
Brown Bros. & Co., 99 coils from Hamburg, 981 coils and 100 bls. from Antwerp, 189 bls. and 72 coils from Rotterdam, 540 coils and 79 bls. from Bristol, 176 coils from Hull, 18 coils and 9 bls. from Bremen and 75 coils from Copenhagen; W. Schall & Co., 307 coils from Genoa and 29 coils from Hamburg; National Bank of Commerce, 71 bls. from Rotterdam; Ellerman's Wilson Line, 97 coils from Southampton and 40 bls. from London; M. Wolfer & Co., 39 bls. from Havana; International Purchasing Co., 39 bls. from Rotterdam; G. M. Graves Co., 109 bls. from London; E. J. Keller Co., 71 bls.

Western Paper Makers Chemical Company

Paper Makers Chemical Company

Kalamazoo, Mich. Holyoke, Mass. Easton, Pa.
Jacksonville, Fla. Pensacola, Fla. St. Austell, England

Rosin Size, Satin White, Clays, Fillers
Foam Killer, Felt Soap and Other Specialties



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We ship in sheets, baled

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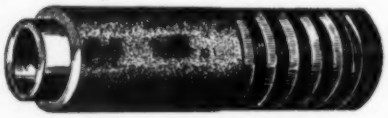
"The Pipe that Stands the Test"



More Durable and Economical

Used extensively by the Paper Industry for conveying paper stock and acids. Especially adapted for conveying sulphite and ground wood.

Has greater carrying capacity than iron pipe, costs less to install and much less liable to freeze than any other type pipe.

Write for catalogue and prices

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BRANCH OFFICE
MALMTORGSGATAN 8
STOCKHOLM
SWEDEN

from Hamburg and 222 bls. from Hull; Bemis Bro. Bag Co., 29 coils from Christiania; United Fiber Co., 28 coils from Glasgow; Order, 43 coils from Bremen and 121 bls. from Rotterdam.

Old Bagging

S. Birkenstein & Sons, 67 bls. from Rotterdam; Rudolf Wolf, 196 bls. from Rotterdam; J. Loewith, 200 bls. from Rotterdam; Castle & Overton, 195 bls. from Rotterdam; Mechanics & Metals National Bank, 88 bls. from Manchester; Anglo-South American Trust Co., 187 bls. from Manchester; E. Butterworth & Co., 254 bls. from Rotterdam; National City Bank, 370 bls. from Copenhagen; E. J. Keller Co., 181 bls. from Antwerp; R. F. Downing & Co., 210 bls. from Rotterdam; Chemical National Bank, 93 bls. from Rotterdam; A. H. Searle, 72 bls. from Glasgow; Order, 261 bls. from Liverpool.

Rags

E. J. Keller Co., 300 bls. from Kobe, 177 from Bremen, 1,013 from Antwerp, 1,759 from Hamburg, 305 from Bordeaux, 159 from Algiers, 2,505 from Rotterdam, 147 from Leghorn, 465 from Havre and 637 from Copenhagen; L. H. Abenheimer, 43 bls. from Antwerp; F. Salomon & Co., 53 bls. from Hamburg; P. Berlowitz, 422 bls. from Antwerp, 378 from Rotterdam and 275 from Bordeaux; Whaling Waste Products Co., 413 bls. from Bordeaux, 47 from Rotterdam and 96 from Antwerp; G. M. Graves Co., 302 bls. from Rotterdam; Northern Metals Selling Co., 124 bls. from Rotterdam; S. Birkenstein & Sons, 264 bls. from Rotterdam, 282 from Leghorn, 226 from Bremen, 209 from Antwerp and 97 from Hamburg; Castle & Overton, 233 bls. from Rotterdam, 101 from Leghorn, 37 from Hamburg and 13 from Manchester; Maurice O'Meara Co., 41 bls. from Havana and 75 from Dunkirk; Katsenstein & Keene, 579 bls. from Havre and 299 from Dunkirk; R. Bishop Mfg. Co., 417 bls. from Dunkirk; G. Meyer, 94 bls. from Leghorn; G. Carrizzo, 159 bls. from Naples; G. W. Millar & Co., 322 bls. from Rotterdam; Stone Bros. & Victor Galaup Co., 232 bls. from Havre; Salomon Bros. & Co., 25 bls. from Havre and 33 from Hamburg; M. Wolfer & Co., 17 bls. from Havana; Daniel M. Hicks, Inc., 73 bls. from Rotterdam; Albion Trading Co., 155 bls. from Bordeaux and 784 from Havre; J. J. Patricof, 79 bls. from Rotterdam; Train-Smith Co., 99 bls. from Antwerp; Guaranty Trust Co., 211 bls. from Bremen, 1,191 from Hamburg, 269 from Antwerp and 109 from London; Bankers Trust Co., 324 bls. from Bremen and 104 from Hamburg; National City Bank, 333 bls. from Bremen, 463 from Hamburg and 77 from Barcelona; International Acceptance Bank, 74 bls. from Bremen, 403 from Rotterdam, 838 from Bristol and 838 from Hamburg; Coal & Iron National Bank, 1,360 bls. from Antwerp and 646 from Rotterdam; Equitable Trust Co., 55 bls. from London and 31 from Hamburg; Anglo-South American Trust Co., 149 bls. from Liverpool, 75 from London, 119 from Glasgow and 277 from Hamburg; Chemical National Bank, 146 bls. from Hamburg, 173 from Bremen and 44 from Rotterdam; Bank of New York & Trust Co., 15 bls. from Rotterdam; Mechanics & Metals National Bank, 314 bls. from Antwerp and 110 from Belfast; State Bank, 106 bls. from London; Philadelphia National Bank, 146 bls. from Rotterdam; Belge Pour L'Etranger, 219 bls. from Glasgow; Strupp & Co., 444 bls. from Hamburg; C. R. Spence & Co., 120 bls. from Antwerp; M. Van Waveren & Sons, 296 bls. from Rotterdam; W. Schall & Co., 111 bls. from Bremen and 68 from Hamburg; Brown Bros. & Co., 399 bls. from Hamburg, 696 from Bremen and 124 from Glasgow; A. W. Fenton, Inc., 1,131 bls. from Rotterdam and 63 from Bremen; Goldman, Sachs & Co., 236 bls. from Bremen; A. C. Fetterolf, 37 bls. from Liverpool; R. F. Downing & Co., 427 bls. from Rotterdam; Order, 414 bls. from Bremen, 253 from Alexandria, 54 from Antwerp, 95 from Venice, 228 from Hamburg, 138 from Bristol, 103 from Rotterdam, 49 from Liverpool and 32 from London.

Miscellaneous Paper Stock

Castle & Overton, 289 bls. from Marseilles; Daniel M. Hicks, Inc., 48 bls. from Dunkirk and 35 from Rotterdam; S. Birkenstein & Sons, 16 bls. from Glasgow; Mechanics & Metals National Bank, 43 bls. from Glasgow and 12 from Dundee; Equitable Trust Co., 583 bls. from Antwerp; T. Abela & Co., 175 bls. from Malta; Brown Bros. & Co., 73 bls. from Bristol; E. J. Keller Co., 103 bls. from Antwerp; Order, 457 bls. from Barcelona and 169 from Dundee.

Paper

Judging from arrivals at the port of New York, imports of paper into the United States during August were on a par with previous months this year, with the possible exception of wrapping paper, receipts of which were somewhat smaller

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
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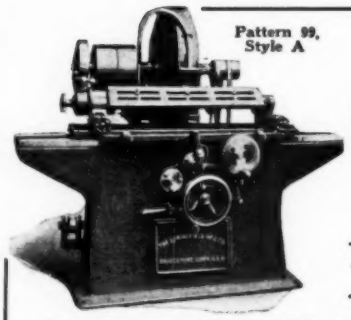

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All Products Guaranteed to Suit You

STEEL SHELL BURRS **YELLOW JACKET SHOWER**

Read the "ROBERTS IDEA"

"MICHIGAN" Combination Steel and Wood Pipe

LONG DISTANCE CONVEYOR OF WATER AND PAPER STOCK IN PAPER AND PULP MILLS—Specially Adapted to Carry Sulphite, Ground Wood and "White Water"

Eighteen reasons why you should use "Michigan" combination steel and wood pipe

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Oklahoma City, Okla.....105 West 16th St.	Chattanooga, Tenn.....702 James Bldg.
Chicago, Ill.....Leiter Bldg., 15 East Van Buren St.	Philadelphia, Pa.....318 Widener Bldg.
Boston, Mass.....Room 737, Oliver Bldg.	Pittsburgh, Pa.....323 Fulton Bldg.

"Steel for Strength—Wood for Durability"

last month. Printing paper imports were fairly large, and usual amounts of cigarette, hanging, drawing, writing and other kinds of paper were received. Importations of paper of all kinds through the port of New York in August follow:

Printing

Chemical National Bank, 1,663 rolls from Hamburg; International Acceptance Bank, 617 rolls from Hamburg; Keuffel & Esser Co., 38 rolls from Hamburg; Oxford University Press, 46 cs. from Liverpool; B. F. Drakenfeld & Co., 23 cs. from Liverpool; Fernstrom Paper Co., 28 rolls from Gothenburg and 4,063 rolls from Hamburg; Stevens Paper Co., 35 rolls from Gothenburg; Street & Smith Publishing Co., 632 rolls from Hamburg; C. Steiner, 54 cs. from Rotterdam and 26 bls. from Hamburg; I. Haas Bros., 75 rolls from Hamburg; Hudson Trading Co., 248 rolls from Hamburg; New York Hauseatic Corp., 98 rolls from Hamburg; C. G. Keferstein, 31 rolls from Hamburg; Seaman Paper Co., 245 rolls from Hamburg; Travers Paper Co., 286 rolls from Hamburg; Panama-Pacific S. S. Co., 244 rolls from Hamburg; Bank of America, 561 rolls from Hamburg; Chatham & Phenix National Bank, 227 rolls from Gothenburg; Dell Paper Co., 432 rolls from Hamburg; H. Reeve Angel & Co., 320 rolls from Bremen; Parsons & Whittemore, 1,631 rolls from Bremen; J. P. Heffernan Paper Co., 276 rolls from Trieste; Perry, Ryer & Co., 151 cs. from Glasgow; P. C. Zuhlke, 72 cs. from Antwerp; E. Naumberg & Co., 128 rolls from Christiania; Traders Paper Co., 20 bls. from Hamburg; Falsing Paper Co., 30 cs. from Hamburg; Drinkhansen & Hollkott Paper Co., 519 rolls from Hamburg; Jaffe & Co., 2 cs. from Hamburg; W. Hartmann & Co., 777 rolls from Hamburg; Order, 25 rolls from Raume, 906 rolls from Hamburg, 1,077 rolls from Kotka, 269 rolls from Christiania, 549 rolls from Bremen, 70 rolls from Gothenburg and 33 cs. from Rotterdam.

Wrapping

J. P. Heffernan Paper Co., 3,214 bls. from Hamburg, 56 bls. from Gothenburg and 367 bls. from Copenhagen; International Acceptance Bank, 20 bls. from Hamburg; E. Dietzgen & Co., 16 cs. from Hamburg; Corn Exchange Bank, 1,872 bls. from Hamburg; Chase National Bank, 56 rolls from Gothenburg and 74 rolls from Hamburg; C. K. MacAlpine & Co., 1,394 rolls from Gothenburg; M. M. Cohen, 52 bls. from Gothenburg; D. S. Walton & Co., 1,735 rolls and 320 bls. from Gothenburg; Martin Walsh, Inc., 18 bls. and 14 rolls from Gothenburg; Bernard, Judae & Co., 28 cs. from Hamburg; Maurice O'Meara Co., 106 bls. from Hamburg and 60 bls. and 1,229 rolls from Rotterdam; F. C. Strype, 23 rolls from Antwerp and 7 cs. from Rotterdam; Birn & Wachenheim, 8 cs. from Rotterdam; Wilkinson Bros. & Co., 38 rolls from Rotterdam; De Nobili Cigar Co., 40 bls. from Genoa; F. L. Kraemer & Co., 5 cs. from Antwerp; Hudson Trading Co., 28 bls. from Rotterdam and 109 rolls from Gothenburg; Import Paper Co., 14 cs. from Rotterdam; Saentis, Inc., 34 rolls from Hamburg; Bendix Paper Co., 11 cs. from London; Gilbert Paper Co., 224 rolls and 59 bls. from Gothenburg; Furness, Withy & Co., 72 rolls from Gothenburg; American Trading Co., 39 rolls from Gothenburg; Arkell Safety Bag Co., 211 rolls from Gothenburg; Order, 141 bls. and 482 rolls from Hamburg.

Cigarette

American Tobacco Co., 1,750 cs. from Bordeaux; J. V. Lago, 8 cs. from Alicante; Miguel, Costa & Miguel, 5 cs. from Barcelona; Standard Products Corp., 128 cs. from Havre and 30 cs. from Southampton; M. Spiegel & Co., 31 cs. from Hamburg; F. P. Gaskell & Co., 50 cs. from Havre; P. J. Schweitzer, 93 cs. from Havre; R. J. Reynolds Tobacco Co., 1,590 cs. from St. Nazaire; De Manduit Paper Corp., 336 cs. from St. Nazaire.

Writing

Guibont Freres & Co., 50 cs. from Southampton and 44 cs. from Havre; O. G. Hempstead & Sons, 5 cs. from Havre; W. J. Byrnes & Co., 10 cs. from Havre; A. Goodman & Co., 10 cs. from Liverpool; Syndicate Trading Co., 4 cs. from Liverpool; J. W. Hampton, Jr., & Co., 9 cs. from Hamburg; F. C. Strype, 6 cs. from Marseilles and 8 cs. from Rotterdam; H. W. Robinson & Co., 2 cs. from Liverpool; E. Dietzgen & Co., 38 cs. from Marseilles; American Express Co., 3 cs. from Liverpool; J. C. Robold & Co., 9 cs. from London.

Drawing

Keuffel & Esser Co., 96 cs. from Hamburg, 8 cs. from Rotterdam and 2 cs. from Liverpool; F. C. Strype, 8 cs. from Rotterdam; H. Reeve Angel & Co., 3 cs. from London; Devoe &

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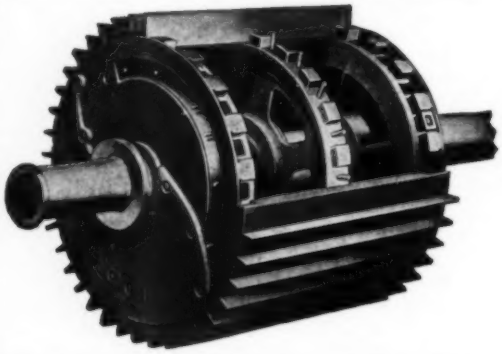

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Old Plates RECLOSED and RECUT to accurate gauge
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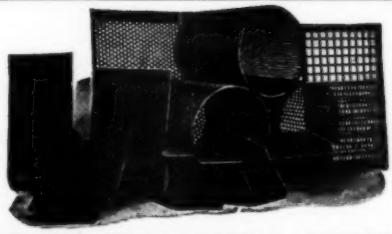

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Elevator Buckets (Plain and Perforated)
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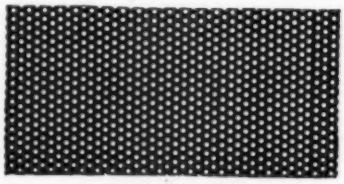
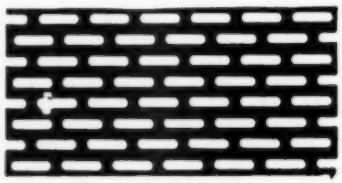
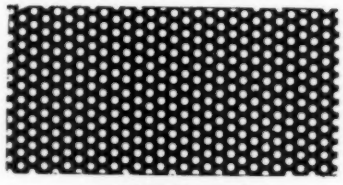
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ½" Slots



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Filter

J. Manheimer, 119 bls. from Southampton; H. Reeve Angel & Co., 34 cs. from London; Order, 25 cs. from Marseilles.

Tissue

Meagher-Devoy Shipping Co., 4 cs. from Liverpool; Neidich Process Co., 10 cs. from Hamburg; F. C. Strype, 35 cs. from Liverpool; Columbia Ribbon & Carbon Co., 3 cs. from Helsingfors; Globe Shipping Co., 2 cs. from Havre; W. J. Byrnes & Co., 2 cs. from Liverpool; Iwai & Co., 12 cs. from Kobe.

Photo

Globe Shipping Co., 294 cs. from Bremen and 9 cs. from Southampton; P. C. Zuhlke, 193 cs. from Antwerp; Gevaert Co. of America, 113 cs. from Antwerp and 3 cs. from Rotterdam; F. Henjes, Jr., 50 cs. from Bremen; J. J. Gavin & Co., 2 cs. from Liverpool; P. Puttmann, 14 cs. from Antwerp; Order, 85 cs. from Antwerp.

Hanging

F. J. Emmerich & Co., 9 bls. from Hamburg and 4 bls. from Liverpool; A. C. Dodman, Jr., & Co., 37 bls. from Liverpool and 8 cs. from Southampton; C. A. Haynes & Co., 7 bls. from London; J. W. Hampton, Jr., & Co., 1,170 bls. from Rotterdam; W. H. S. Lloyd & Co., 11 bls. from London; F. G. Prager & Co., 469 bls. from Rotterdam; Order, 4 bls. from Liverpool.

Board

P. H. Petry & Co., 31 cs. from Hamburg; Saentis, Inc., 17 cs. from Hamburg; Bendix Paper Co., 46 cs. from Hamburg; O. G. Hempstead & Sons, 21 cs. from Bremen; F. C. Strype, 87 cs. from Rotterdam; Adrian Vuyck, 550 rolls from Rotterdam; Lagerloef Trading Co., 107 bls. from Bremen; R. Reiners, Inc., 15 cs. from Bremen; Porto Rican-American Tobacco Co., 24 cs. from San Juan; Friedman & Co., 45 cs. from Hamburg; Metropolitan Import & Mfg. Co., 52 cs. from Hamburg; F. G. Prager & Co., 19 cs. from Hamburg; New York Label & Box Works, 7 cs. from Hamburg; O. M. Baxter, Inc., 38 cs. from Gothenburg; Fiber Case & Novelty Co., 119 bls. from Gothenburg; Order, 34 cs. from Hamburg.

Miscellaneous

Whiting-Patterson Co., 46 cs. from Southampton and 2 cs. from Hamburg; P. H. Petry & Co., 10 cs. from Hamburg and 8 cs. from Bremen; E. Daiber, 4 cs. from Antwerp; H. Brockelbank, 6 cs. from London; Yardley & Co., 3 cs. from London; Bernard, Judae & Co., 5 cs. from Gothenburg; Japan Paper Co., 23 cs. from Rotterdam, 40 cs. from Genoa, 2 cs. from Southampton, 11 cs. from Havre and 6 cs. from Gothenburg; C. W. Williams & Co., 7 cs. from Antwerp; Hensel, Bruckman & Lorbacher, 38 cs. from Rotterdam; Elleto & Co., 12 cs. from Genoa; British-American Tobacco Co., 256 cs. from Shanghai; H. Reeve Angel & Co., 6 cs. from Gothenburg; Furness, Withy & Co., 229 rolls and 12 bls. from Gothenburg; American Express Co., 3 cs. from Havre; Judson Freight Forwarding Co., 11 cs. from Havre; Wilkinson Bros. & Co., 22 cs. from Genoa; Louis DeJonge Co., 3 cs. from Antwerp; Dupont Cellophane Co., 4 cs. from Southampton; Tamm & Co., 3 cs. from Hamburg; Borden & Riley Paper Co., 19 cs. from Antwerp; Importers Metal Leaf & Bronze Powder Co., 3 cs. from Bremen; E. Dietzgen & Co., 13 cs. from Hamburg.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 11150—Old newspapers. Calcutta, India. Purchase desired.

No. 11145—Paper. Bahia, Brazil. Purchase and agency desired.

No. 11161—Wall board, plaster center. Auckland, New Zealand. Agency desired.

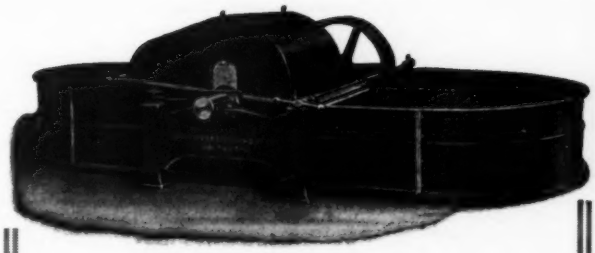
No. 11308—Leather board for packing purposes. Swansea, Wales. Purchase desired.

No. 11331—Caustic soda. Bahia, Brazil. Agency desired.

No. 11387—Crude sulphur. Almeria, Spain. Purchase desired.

No. 11296—Caustic soda. Hamburg, Germany. Purchase desired.

No. 11295—Crude sulphur. Calcutta, India. Purchase desired.



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Guaranteed Perfect
Draper Hollow Balanced Brass Balls
FOR STUFF PUMPS

Absolutely balanced; will not pound out of shape

Specify these when ordering new pumps.

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Every ball bears our registered trade-mark

WANTED—Beater engineer for general charge beating four machine groundwood specialty mill in New England. Must be experienced with color matchings and beating practices. Address Box 68, The Paper Industry.

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FABRICATORS OF STEEL PLATE FOR OVER SIXTY YEARS
SEND DRAWINGS AND SPECIFICATIONS FOR PRICES
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Belted Type Turbine for sale. Unit now in first-class operating condition consisting of 400 to 500 H. P. Turbine Heavy Reduction Gear and Rockwood Paper Pulley with Heavy Pedestal Bearings; all mounted on substantial sub-base. Surface Condenser also available, although machine can be operated non-condensing up to 300 H. P. if desired.

Has been used for driving Beater Room. Is suitable for driving Jordan or Paper machine. Is as good as new in every respect. Reason for selling—electrification of Beater Room. For information apply to Rush Machinery Company, 932 Olive Bldg., Pittsburgh, Pennsylvania.

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SOFTENING & FILTRATION
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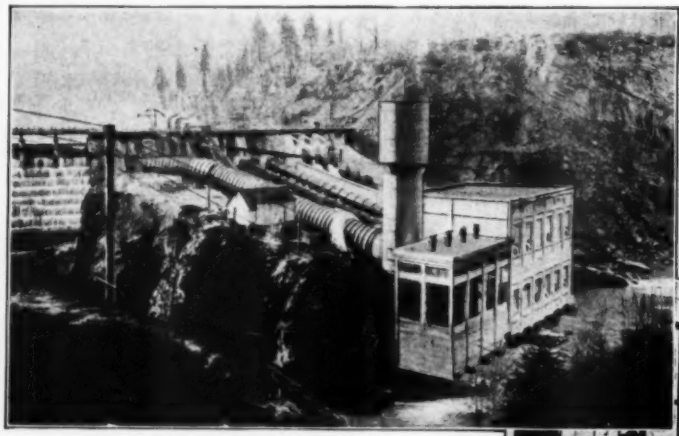
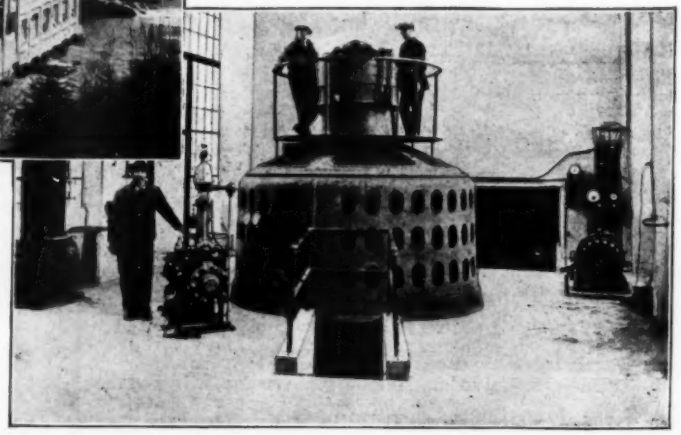
SMITH HYDRAULIC TURBINES

developing 10,000 H. P. under 100 ft. head are in successful operation in the new power plant of The Washington Pulp and Paper Co., at Port Angeles, Washington. Interior and exterior views of this plant are shown herewith. Turbines are of Vertical shaft scroll case type driving direct connected generators.





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New Catalogs, Booklets, etc.

(Kindly mention The Paper Industry when writing for these booklets.)

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis.—Bulletin No. 1632G, "Centrifugal Pumps and Pumping Units" is a revised edition of the company's previous bulletins on the subject. Section devoted to pumps for paper mills.

ARMSTRONG MACHINE WORKS, Three Rivers, Mich.—Catalog D is a temporary edition preceding the more complete catalog dealing with Armstrong Steam Traps.

BROWN HOISTING MACHINERY CO., Cleveland, Ohio—Catalog M-24 is the most complete bulletin on belt conveyors ever issued by the company. Contains engineering data to be used in connection with belt conveyors.

CARRICK ENGINEERING CO., 530 S. Clark St., Chicago, Ill.—Catalog No. 99, "The Automatic Control of Combustion." Full of valuable diagrams of interest to consulting and designing engineers. Contains treatise on automatic control methods and systems.

CHAMPION COATED PAPER CO., Hamilton, Ohio—"The Beating Engine" is chapter five of the story of the modernization of papermaking.

CLEVELAND CRANE AND ENG. CO., Wickliffe, Ohio—Catalog No. 3, "Cleveland Electric Tramrail" shows completely the development of the Tramrail system.

CHISHOLM AND MOORE MFG. CO., Lakeside Ave., E. 49th to E. 53rd St., Cleveland, Ohio—A 12-page bulletin about the company's new electric hoist designed on the principle of the fewest possible things to get out of order and those easily fixed if they do.

CONVEYORS CORPORATION OF AMERICAN, 326 W. Madison St., Chicago, Ill., has published a new booklet "American Cast Iron Storage Tanks" showing the various uses to which their product may be put. Contains table of weights, measures and capacities to aid the buyer.

THE FOOTE BROS. GEAR & MACHINE CO. of Chicago has under preparation a new bulletin entitled "Foote IXL Flexible Couplings." This booklet will contain a great deal of valuable and instructive information pertaining to the use of flexible couplings for practically every purpose. Their new Speed Reducer catalog announced in a previous issue, has been a little delayed to permit of the accumulation of additional information and data of interest to users of this class of equipment. The new catalog will treat in detail the many applications of speed reducing equipment to material handling equipment and to scores of manufacturing operations in nearly every industry.

GRATON AND KNIGHT MFG. CO., 356 Franklin St., Worcester, Mass.—A folder that explains a new method of leather belting construction of interest to all belt using industries.

ILLINOIS STOKER CO., Alton, Ill.—Third edition of catalog L offers complete information regarding Illinois Chain Grate Stokers. An attractive book full of valuable ideas for those who can use them.

M. A. MOFFT CO., 814 W. Washington Ave., Indianapolis, Ind.—A new booklet describing in detail the National Furnace Arches.

S. F. BOWSER AND CO., INC., Fort Wayne, Ind.—"The GO in Chicago" is an excellent 28-page booklet of Bowser service in and around Chicago.

STICKLE STEAM SPECIALTIES, Indianapolis, Ind.—A folder giving details of the Stickle Differential Drainage System. Contains many facts on drying paper.

STEPHENS-ADAMSON MFG. CO., Aurora, Ill.—Catalog No. 27 S-A Chains and Gears, a new treatise completely cataloging chains, sprockets and gears.

SKINNER, SHERMAN AND ESSELEN, 276 Stuart St., Boston, Mass.—Chemists and Engineers. Business Chemistry, a leaflet linking up modern chemistry and business problems. Presents interesting articles showing how chemistry has solved baffling problems.

W. A. JONES FOUNDRY AND MACHINE CO., 4401-51 W. Roosevelt Road, Chicago, Ill.—Catalog No. 29, "Jones Gears" contains 224 pages of information on gears for those who can use such data.

W. H. NICHOLSON AND CO., Wilkes-Barre, Pa.—Catalog No. 24 "Nicholson Steam Specialties" an illustrated booklet of special parts for power plants, heating systems, industrial appliances and locomotives.

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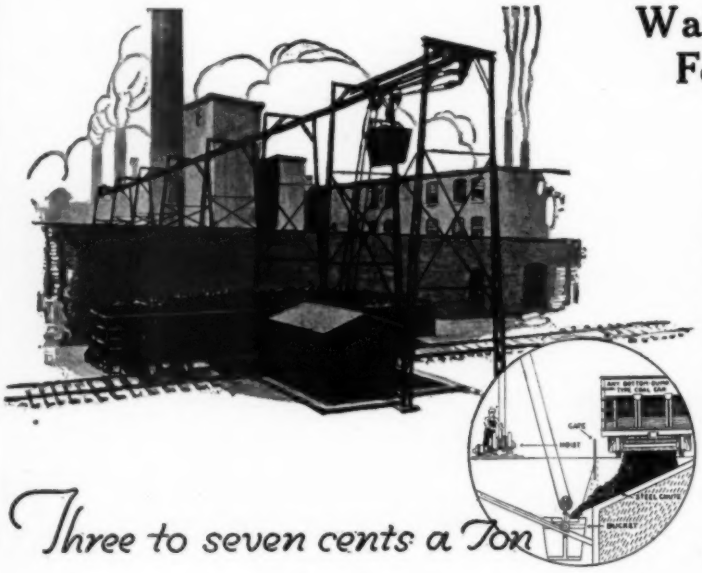

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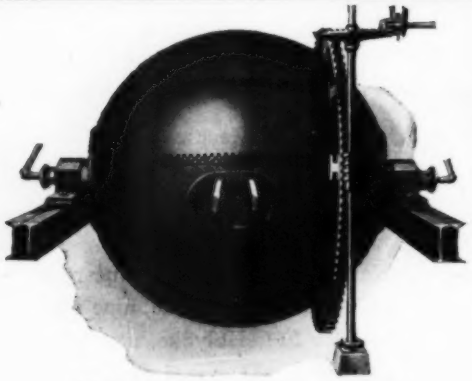

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